



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

A 478610

DUPL

GENERAL LIBRARY
UNIVERSITY OF MICHIGAN.

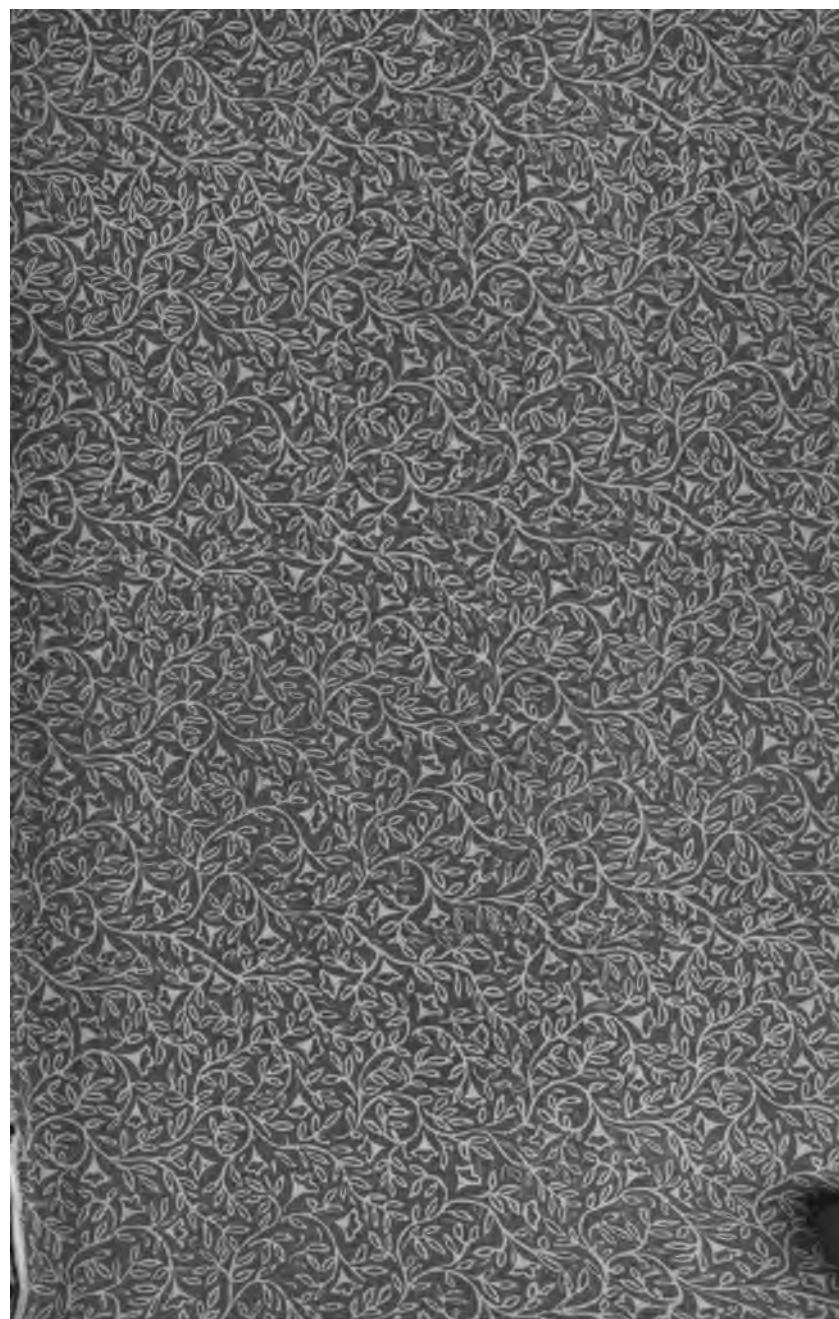
THE
Hagerman Collection

OF BOOKS RELATING TO
HISTORY AND POLITICAL SCIENCE

BOUGHT WITH MONEY PLACED BY
JAMES J. HAGERMAN OF CLASS OF '61

IN THE HANDS OF
Professor Charles Kendall Adams

IN THE YEAR
1883.





~~vi 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100~~

Box 6.2,

H3

171

11754





222-12

FIRST PRINCIPLES
OF
POLITICAL ECONOMY
WITH REFERENCE TO
STATESMANSHIP
AND THE
PROGRESS OF CIVILIZATION

BY PROFESSOR W. D. WILSON
OF THE CORNELL UNIVERSITY

"It has something essential to teach the statesman and the moralist, as well as the producer, the exchanger, and the consumer of commodities."—DR. ELDER.

PHILADELPHIA
HENRY CAREY BAIRD & CO.
INDUSTRIAL PUBLISHERS
810 WALNUT STREET
ITHACA: FINCH & APGAR
1832.

Entered according to Act of Congress, in the year 1875,
BY W. D. WILSON,
In the Office of the Librarian of Congress, at Washington.

COLLINS, PRINTER,
705 JAYNE ST.

Stereotyped by B. H. mon Smith, Ithaca, N. Y.

P R E F A C E .

The world is so full of books on all subjects that it is expected of any one who adds another to the number already existing, that he will offer some apology for the new demand he is making upon public attention. And the Preface seems to be the place and the occasion where he is expected to make it.

Having been called some fifteen or twenty years ago to teach Political Economy—in consequence of there being no one else that had leisure to do so—I soon began to prepare the way for the use of the text books I had chosen, by certain elementary definitions and statements, like what are contained in the earlier chapters of the ensuing pages. Gradually, however, the elementary definitions which had thus been commenced, grew into nearly all that is contained in this work. The manuscript served for several years as the notes from which I gave the required Lectures, and is now printed for the use of the students who attend the lectures in the

ordinary course of University instruction. And it is offered to the public in hopes that it may do something towards advancing a knowledge of those principles of the creation and distribution of wealth which confessedly lie at the foundation of our civilization, and are among the most influential and controlling influences that affect human progress.

If the book now offered to the public is found to have any merits, it will be, I think, because—

1. It presents the topics in a better order and arrangement.

2. It gives to the primary facts and principles, clearer and more precise definitions.

3. In consequence of the two foregoing peculiarities, it makes certain broader generalizations which are, I think, of great scientific interest and practical value.

I am under great obligations to Professor Z. H. Potter for valuable labor in getting the Mss. ready for publication and for assistance in carrying it through the press.

W. D. WILSON.

Cornell University, Ithaca, N. Y.,

February, 1875.

CONTENTS.

I. TITLES OF THE CHAPTERS.

CHAP. I.—INTRODUCTION.

CHAP. II.—OF THINGS IN RELATION TO WEALTH.

CHAP. III.—OF PERSONS IN RELATION TO WEALTH.

CHAP. IV.—OF THE FORCES OF NATURE IN RELATION
TO WEALTH.

CHAP. V.—OF POPULATION IN RELATION TO WEALTH.

CHAP. VI.—OF RENT AND WAGES.

CHAP. VII.—OF EXCHANGE.

CHAP. VIII.—OF MONEY AND BANKING.

CHAP. IX.—OF OVER-POPULATION—HOPES AND PROSPECTS.

II. ANALYSIS OF THE CONTENTS.

CHAPTER I.

INTRODUCTION.

Political Economy defined,	.	.	.	.	.	17
Important to a nation,	.	.	.	.	.	18
Subdivisions of the subject,	.	.	.	.	.	19

How far a science of facts,	20
Everything considered in a state of change,	22
Unsettled in regard to its general principles,	23
First reason for this,	23
Second reason,	24
Third reason,	24
Our position in regard to it,	26
Practical value of Political Economy,	26
Subservient to higher civilization,	28

CHAPTER II.

OF THINGS IN RELATION TO WEALTH.

Of things in relation to wealth,	31
The cost of a commodity,	31
Utility or intrinsic value,	32
Intrinsic value for different purposes,	33
Intrinsic value for different persons,	34
Intrinsic value for different uses,	35
Measure of intrinsic value,	36
Exchangeable value,	37
The product of labor,	38
The average cost of reproduction,	39
Labor increases intrinsic value,	40
The kinds of human wants,	41
Price, distinguished from value,	42
Price determined by value,	45
Supply and demand, as affecting price,	46
Three modifications,	47
Illustration,	49

CHAPTER III.

OF PERSONS IN RELATION TO WEALTH.

The two elements or factors of wealth,	51
--	----

CONTENTS.

7

Value in relation to sale and consumption,	52
Wealth considered as distributive and aggregate,	53
Aggregate wealth important to nations, distributive wealth to individuals,	54
The motives by which men are actuated,	55
Different kinds of human wants,	56
All persons considered as laborers,	57
Producers and consumers,	57
Unproductive consumption,	58
Producers classified,	58
The function of agriculturists,	59
The function of manufacturers,	59
Their relation to intrinsic value,	60
Limit to the increase of exchangeable value,	61
Limit to manufactures,	61
Their relation to distributive wealth,	62
The function of traders,	64
Their relation to quantity and intrinsic value,	65
The way in which they increase wealth,	65
Limits to their usefulness,	68
Usefulness of the three classes compared,	69
The function of inventors,	71
All the population referred to the three classes,	72

CHAPTER IV.

OF THE FORCES OF NATURE IN RELATION TO WEALTH.

Reduction of prices,	76
Limit to the decrease,	77
The use of tools and machinery,	78
Their relation to the forces of nature,	79
The forces of nature defined,	79
The forces of nature gratuitous,	80

They are inexhaustible,	81
Conditions of their use,	82
Extent of their usefulness,	82
Man's position in nature,	84
Effect of machinery on price,	85
Why not uniform in its influence,	85
Recapitulation and summary,	87
Elements of the labor of production,	88
Land both a tool and a force,	89
Ricardo's theory of rent,	91
Criticisms on the theory,	92
Land never costs more than the average cost of reproduction,	93
How far Ricardo's theory correct,	94
Effect of a limit to the supply of land,	95
What makes the price of land,	96
Land rises in price with cultivation,	97
New intrinsic values with increased population,	98
Increased value of human labor,	100
Exchangeable value referred to its elements,	101
Taxes and insurance,	102
Commodities become cheaper,	103

CHAPTER V.

OF POPULATION IN RELATION TO WEALTH.

The emergence from savagery to civilization,	107
Tendency of savage life downwards,	107
Civilization or education upwards,	108
Numbers necessary to the use of the forces of nature,	109
Origin and use of capital,	110
Capital represents only labor,	110
The first effect of an improvement,	111
The second effect,	112
The ways in which density of population affects wealth,	115

CONTENTS.

9

(I) Division of labor,	117
Saving of capital,	118
Increase of knowledge of materials,	119
Increased skill and dexterity,	119
Adaptation of natural abilities,	120
Saving the time of others,	120
Division of labor implies co-operation,	121
Limits to the division of labor,	122
(II) Saving in the cost of exchanges,	125
Saving in labor and travel,	126
Saving in the cost of roads,	127
Saving in teams, etc.,	128
The saving by living in villages,	129
(III) Increased stimulus to production,	130
(IV) Articles come to have new values,	131
(V) Increase in the proportion of agricultural population,	132
Modifying considerations,	133
Waste in relation to the increase of wealth,	135
Unproductive capital,	138
Moral influence of having the producer and the consumer near together,	139

CHAPTER VI.

OF RENT AND WAGES.

Wealth the product of three elements,	142
English use of rent, wages, and profit,	142
Capitalists and laborers,	145
Their necessity to each other,	146
Rent, wages, and profit,	147
The contract between the parties,	148
The law of supply and demand,	149
The fact of competition,	150

The effect of these laws on prices,	153
May not act instantaneously,	153
The force of habit on prices,	155
The law of supply and demand will produce a supply,	156
Will distribute laborers to their various callings, .	156
Will regulate wages among the different employments, .	157
Time a factor of wages,	159
Time also a factor in rent,	160
The result reached by another process,	161
Every laborer wants all he can get,	162
The higher wages of skilled labor,	163
Exceptions to the law,	165
Effect of constancy of occupation,	165
Second law determining the rate of wages,	166
Average cost of reproduction will not explain them, .	167
In what sense wages equal in all departments,	168
This just as well as necessary,	168
Different rates of rent,	169
Relation of rent to interest,	170
Rate of interest decreases with increase of capital,	171
Depends rather on value than amount,	173
Important law of distribution,	174
Capitalists cannot defeat this law,	175
Equality between rent and wages,	177
The same result reached in another way,	177
Causes that retard the operation of the law,	178
Predominance of labor,	179

CHAPTER VII.

OF EXCHANGE.

No exchange without division of labor,	182
Exchange between those who use tools,	183
Tools the result of past labor,	184
How determine their value,	185

CONTENTS.

II

Tools reappear in other articles,	186
The basis of exchange,	187
Elements of labor represented in any article, . . .	188
Basis of estimate between the buyer and seller, . .	189
The gain by the exchange,	189
The money-price of but little account,	191
In what respects important,	191
The benefits of exchange,	192
The cost of exchange,	193
Who bears the cost?	194
Cost varies with bulk and weight,	195
Commercial centres determining prices,	196
How determined at the centres,	198
Effect of the rising of new centres,	200
Limitation to the law,	201
Cost distributed between the producer and the consumer,	202
The only way of escaping this result,	202
What is sold determines the price of all that is produced,	203
It determines also the price of all other articles, . .	204
A common mistake with regard to the benefits of trade,	205
Thrift determines the amount of exchanges, . . .	206
Benefits of proximate exchanges,	209
Articles should be manufactured at a place of production,	211
Difference in facility for manufacture and production, .	212
The great wealth of commercial centres,	213
Inferences in favor of free labor and free trade, . .	215
Governments not satisfied with this,	216
I. Monopolies, copy and patent rights,	217
II. Usury laws,	218
Arguments in their favor,	219
III. Tariff, for revenue,	221
Objections to it,	222
Effect of tariff on importations,	223
What makes a tariff protective,	226
Effect of a tariff that is below protection, . . .	226
Limits within which protection is possible, . . .	227

List's doctrine,	229
Protection and national independence,	230
Diversification of industry,	231
Free trade reduces the wages of the laborers,	231
The evil effects of low wages on the laborers,	232
Beneficial effects of the higher manufactures,	236
Free trade only with free laborers,	238
Difference between British doctrine and British practice,	239
John Stuart Mill advocates protection,	240
Classes of persons that are not likely to favor protection,	242
Political motives that may oppose it,	244
Probability of the continuance of protection in America,	245

CHAPTER VIII.

OF MONEY AND BANKING.

Traders between producers and consumers,	247
Money the means of exchange,	247
Theories of money,	248
Gold and silver a part of the wealth of a country,	249
What determines their value,	249
Useful for other purposes than coin,	250
Proof of this view,	251
Reasons for using them for coinage,	251
Signification of coinage,	252
Effects of increase of gold and silver,	253
Labor, not money, the standard of value,	253
Importance of this view,	256
Market value determines the coin value of silver and gold,	257
Money and trade, how they enrich,	257
Trade enriches individuals,	258
Banks, (1) as places of deposit,	259
Banks, (2) as places of exchange,	260
Saving of labor thereby,	261

CONTENTS.

13

Clearing houses,	261
Banks, (3) for discount and loans,	262
Banks, (4) for issue of bills,	263
Paper currency saves loss,	264
Less specie needed,	265
The process of banking,	265
The bankers' resources,	267
Loan of the deposits,	268
The nature of the "loans and discounts,"	270
Loans deposited,	271
Necessity for a specie basis,	272
The effect of redemption,	274
Ratio of specie to loans and discounts,	275
Limit to a bank's "circulation,"	278
How banks cause fluctuations in prices.	278
Return to specie payments after suspension,	279
Ratio of specie to circulation in this country,	280
The effects of over-issue,	281
How money differs from other commodities,	282
What determines the amount of paper,	285
Banking compared with other "business,"	286
How determine the amount of paper needed,	287
How determine the amount of specie,	289
Governments cannot control the amount,	290
How gold and silver affect the amount,	292
Why no more is coined,	293
Effects of inconvertible paper,	294
A practical test proposed,	295
How money gets into circulation,	296
Paper not convertible on demand,	298
Premium on gold determined by the ratio of gold to paper,	299

CHAPTER IX.

OF OVER-POPULATION—HOPES AND PROSPECTS.

Wealth the product of quantity into value,	301
Man's well being depends on distributive wealth,	302

Effects of increasing and of decreasing wealth,	302
Effects seen in large cities,	304
Two theories of population,	304
Reasons for Malthus's theory,	305
Reasons for Carey's theory,	306
How far satisfactory,	308
The rate of increase of production,	309
The rate of increase of population,	310
Limits to the rate of increase of population,	311
Statistics bearing on this point,	314
Difference between civilized and savage society in this respect,	315
Inference from the foregoing,	317
Reference to the present condition of civilized nations,	317
The rate of interest indicates the rate of increase of wealth,	318
This compared with the rate of increase of population,	319
Inference from these facts,	320
A turning point in the law,	322
Signs of approach to it,	323
The effect of reaching it,	324
Changes in social and private habits,	325
Fears of a <i>noblesse</i> of wealth,	326
Reasons why there can be none,	327
Unity of executive necessary,	329
Effects of increasing intelligence,	330
Fears of a violent assumption of wealth by the few,	331
The poverty of the many no fault of nature,	332
Economic effects of universal suffrage,	334
Increasing regard for the principles of right,	336
Improvement in the administration of justice,	337
Approach towards social equality,	340
No over-population possible,	341
APPENDIX,	343

BOOKS OF SPECIAL VALUE FOR REFERENCE.

As no one book in any science can ever be satisfactory to the student who wants to look on all sides of his subject, I subjoin a list of those which have seemed to me to be especially worthy of reference and consultation, naming those which not only seem to be the best, but are also within easy reach of all persons. These works I arrange under three different heads,—(1) those of importance as marking eras or stages in the progress of the science. (2) those to be regarded as the fullest and best treatises that represent the science as it now is, and (3) a few smaller books of great value which are more within the reach of ordinary readers.

I. BOOKS THAT HAVE MARKED AN ERA IN THE PROGRESS OF POLITICAL ECONOMY.

1. *An Enquiry into the Nature and Causes of the Wealth of Nations.* By Adam Smith, LL.D. First published 1776 or 7. 2 vols. 4to.

This work is regarded as the foundation and in some sense the fountain of the Science. It is seldom read now, however, by those who are anxious to get the most and best information in the shortest space.

2. *An Essay on the Principles of Population as it affects the Future Improvement of Society.*

The first edition, London, 1798, 1 vol. 8vo., was anonymous. In 1826 appeared the sixth edition, 2 vols. 8vo. with the author's name—Thomas R. Malthus. The work is noted for the introduction of the famous Malthusian theory of population.

3. *The Principles of Political Economy and Taxation.* By David Ricardo, Esquire. 1 vol. 8vo., 1821, 3d ed.

This book is famous for the introduction of the very commonly received doctrine of Rent known as the Ricardo theory.

4. *The Past, Present, and Future,* By Henry C. Carey. 1 vol. 8vo. Philadelphia, 1848.

This was, and is still, the most elaborate discussion of the subjects of Population and Rent, in opposition to Malthus and Ricardo, that has been published. It goes over the whole ground of History and Geography with reference to the questions involved: the cultivation of the soil, which is the first to be cultivated and which the first to be abandoned by a retiring population, and the relation of the rates of the increase of population and of wealth respectively, in the case of both an increasing and of a decreasing density of population.

II. BOOKS THAT ARE TO BE REGARDED AS THE MOST FULL AND COMPLETE EXHIBITIONS OF THE SCIENCE AS IT NOW EXISTS.

1. *Principles of Social Science.* By Henry C. Carey. 3 vols. 8vo. Philadelphia, 1858.
2. *Principles of Political Economy, with a sketch of the Rise and Progress of the Science.* By J. R. MacCulloch. 1 vol., 8vo. 1825. Fourth ed. 1849.
3. *Principles of Political Economy, with some of their applications to Social Philosophy.* By John Stuart Mill, 1848.

There have been two American editions, one in Boston and another still later by the Appletons, 2 vols. 8vo., New York. There is also a cheaper edition, 1 vol., double columns and fine print, by Lee, Shepard & Dillingham, Philadelphia, 1872.

4. *National System of Political Economy.* By Frederick List. Translated from the German, with Notes and a Preliminary Essay, etc. 1 vol. 8vo. J. B. Lippincott, Philadelphia, 1858.

Of these works, the first named advocates Protective Tariff; the second is opposed to it. Mill is, perhaps, the most complete work, on the whole, extant. He writes, however, from an intensely British point of view, although he admits that if he were an American he should probably advocate Protection here. The work of List is especially valuable as exhibiting the effects of the two systems of policy on the various nations of the civilized world.

III. SMALLER WORKS OF VARIOUS CHARACTERS THAT ARE WITHIN THE REACH OF ALL.

1. *American Political Economy, including Strictures on the Management of the Currency since 1861.* By Francis Bowen, Professor in Harvard College. 1 vol. 8vo., pp. 495, 1870.
2. *Elements of Political Economy.* By Arthur Latham Perry, Professor of History and Political Economy in Williams College. 8vo., pp. 449, 1866.
3. *The Science of Wealth—a Manual of Political Economy, embracing the Laws of Trade, Currency and Finance.* By Amasa Walker, LL.D. Lecturer on Political Economy in Amherst College, 1867. 1 vol. 8vo., pp. 496.
4. *A Manual of Political Economy.* By E. Peshine Smith, 1853. 12mo., pp. 269.

Of these authors, Bowen and Smith advocate Protection. Perry and Walker advocate Free Trade. Walker is particularly full on the subject of currency.

I add one work more, which I think of great value. I know of none that is more so.

Questions of the Day, Economic and Social. By Dr. William Ellder, 1871. 1 vol. 8vo., pp. 367. Published by Henry Carey Baird, Philadelphia.

POLITICAL ECONOMY.

CHAPTER I.

INTRODUCTION.

Political Economy defined—Important to a nation—Subdivisions of the subject—How far a science of facts—Everything considered in a state of change—Unsettled in regard to its general principles—First reason for this—Second reason—Third reason—Our position in regard to it—Practical value of Political Economy—Subservient to higher civilization.

1. Political Economy defined.

Political Economy is defined to be the "Science of wealth."

The word wealth, however, is used in two senses. In one it is a concrete term and denotes the material objects which one is said to own, and which he may use for the promotion of his comfort, his welfare, or his pleasure. In the other it is abstract and de-

notes simply well-being. This last was formerly the most common use of the word, though the former use is now the prevailing one.

The word "Economy" itself means primarily household law; or the law of the family. And as "the ways and means" of life are usually a matter of prime concern to every family, the general term came naturally to have the limited and specific meaning of the law or way of making the supplies more abundant in quantity and of using them to the best advantage.

2. *Important to a nation.*

And what is thus important to the family becomes also a question of engrossing and controlling importance in the management and administration of the affairs of a nation. Most of the peoples who have risen to be wealthy and powerful nations have begun their career in poverty, and barbarism. Increasing numbers and wants soon force upon them the necessity of considering the means of supply. And the development of the moral sense will soon impose restrictions upon the acquisition and use of the "ways and means." Most barbarians are marauders and pirates.

Hence in a general sense we say that Political Economy is the science which teaches us how to

make the best use of the material objects in Nature around us for the promotion of our well being.

3. *Subdivisions of the subject.*

It is sometimes divided into four branches, Production, Distribution, Exchange and Consumption. These four terms denote the classes of operations into which all the acts of men in relation to wealth may be divided. But it is not convenient to treat them separately, since no one of them can be satisfactorily discussed without some knowledge of the others.

But the subdivision and classification is recognized and based upon four facts, namely: that before anything can be an object of wealth, labor must be bestowed upon it in *production*; and second, that this labor must be co-operative; that is, it must be the work of more than one person, each co-operating with and helping the other. Hence there must be a *distribution* of what is produced between the several parties who have bestowed labor, or a representative of labor called "capital," in its production; and third, before it can be used and so minister to man's wants there must be an *exchange* between the producers and consumers, of different kinds, that all persons in a community may share in the products of its industry; and fourth, in the use of any article

there is a *consumption*, a using up of what has been the subject of labor, distribution and exchange.

4. *How far a science of facts.*

It has been customary to regard Political Economy as peculiarly a science of facts and deduction based upon extensive collections of statistics. The consequence is that there is an almost endless diversity of opinions among writers on the subject, and so much of diversity and uncertainty is there in their teaching that the doctrines of the schools and the professed teachers of Political Economy have been found of very little value by practical men, and a very unsafe guide to statesmen, financiers, and business men generally.

I propose in these Chapters to pursue a different method with hopes of better and more satisfactory results.

In fact no law can be proved *a posteriori*, that is, from a mere gathering and comparing of facts. In all such attempts there is an assumption, tacitly made and often without the slightest suspicion of the fact that any such assumption has been made, upon which, nevertheless, the certainty and value of the conclusion depends no less than upon the collected facts themselves.

In mathematics it is held to be a certainty that

any two points will determine the course or position of a straight line. If now we have two or more points and assume that they are in one and the same straight line, we can from the data thus given easily determine the direction and equation of the line. But a line to pass through any number of given points need not be straight. It may have a curvature almost endlessly varied. And what is more to our purpose now, it may in its course between those points or beyond them, run any where or in any conceivable direction, and of course, therefore, to any length or distance, or reach any singular point which may seem exceptional and beyond all law and all possibility. But if, in addition to one or two points in the course of the line, we know the forces that propel any object that is moving along the line, keep it in, and determine for it its course, we can determine the nature of the line, and the velocity and position of the moving body at any given moment. All this is as familiar as the *a, b, c's*, to those who are acquainted with analytic mathematics, and the calculus.

Now what points are to the line, and the line to these mathematical calculations, facts are to a law, and both facts and law are to science. If we know the cause or causes of any motion or movement; where they are situated, how and in what direction and with what force they act, we can determine the

line along which the moving body will progress, and the points it can possibly reach, or in other words, the law of its motion.

5. Everything considered in a state of change.

In Political Economy we must consider every thing in a state of change; we take the raw material and follow it through all its stages of changing form, increasing value and final return through consumption to the state of nature, a mere mass of inorganic elements. We consider society also in all its stages, from savagism up to the highest civilization, from the sparsest population found among savage, or half-civilized, or nomadic tribes, up to the densest accumulations of inhabitants in any of our most wealthy commercial centres. And we consider wealth also from its first beginnings in the savage state of man, where there are no mechanic arts, where there is no exchange, or only the least possible amount, up to the fortunes that are counted by millions, and the commerce that brings to our doors every varied product of the earth's abundance that can minister to our wants. Hence it is evident that we have to deal with what the mathematician calls "variable quantities," and are concerned chiefly with the laws of variation—increase and decrease. And the truths we shall have occasion to discuss,

can for the most part be best stated for all who understand such forms, in the forms of mathematical equations—and especially differential equations.

The differential coefficient we can seldom if ever find, but its *nature* we can always determine. And we can thus know whether it be a whole number or a fraction, positive or negative, such as to imply an attainable maximum or minimum, or unattainable limits or not. I shall occasionally use these forms of statement, explaining my expressions as I go along, so as to make them intelligible to those who have not studied that branch of mathematics.

6. *Unsettled in regard to its general principles.*

Of all the branches of knowledge that lay claim to be considered as *sciences*, there is no one perhaps that is less settled in the definitions of its terms, and the acceptance of any general first principles, than Political Economy.

7. *First reason for this.*

For this, two reasons may be assigned. Perhaps there are several more.

The first that I shall specify, is the one already alluded to in speaking of the method that has been proposed. It has been regarded as pre-eminently a

science of observations and facts. But the facts are so numerous, so complicated, that the opportunity for mistake and error, that always exists in a *positive* science, becomes not only a probability, but almost an inevitable necessity in this case.

8. *Second reason.*

Another cause of the present condition of the science arises, as I think, from the disposition to discuss, even in the most elementary treatises, the questions of statesmanship and social organization, which are rather applications of the science, than parts of the science itself. In this respect each writer has some opinions and theories of his own; some form of government or measure of finance, or scheme of social reform that he is anxious to promote, and it would be contrary to human nature if under such influences, each one were not led—perhaps unconsciously—to give as definitions, accept as axioms, and assume as first principles whatever has a tendency to support the object he has in view, the form of government he would vindicate, or the financial policy he would promote.

9. *Third reason.*

But again: Each writer is a citizen or subject of some particular nation. The facts around him are

likely to be the first that are seen, and those that are the most attentively studied. He is apt to assume that they are natural, and the result of *natural* laws, how much soever they may have been the result of man's interference with those laws. Thus English writers generally seem to assume that Monarchy with an hereditary aristocracy, is the best form of government, and that a Political Economy, that does not vindicate such a form of government, cannot have much claim to be considered as a science. But if not this, they assume the existence of a moneyed class, who own the land, and for the most part the "capital" of the nation, whose profits are first to be secured and vindicated, and who are at liberty to employ laborers, or to spend their money in other ways as they please; they are also generally of the opinion that England's manufacturers are one great source of her wealth, if not the greatest, and hence they are naturally inclined to the policy of trade that tends to favor England's monopoly of the manufacturing industry and commerce of the world.

All these influences are natural, but they tend to bias the judgment and add greatly to the other causes that prevent a comprehensive and impartial view of the facts, and the laws of nature, on which the science should be based.

10. *Our position in regard to it.*

In this country the biases and misguiding influences may be of another character, and tending in a very different direction. But our position predisposes us to see the mistakes of foreign writers, and frees us from many, at least, of the influences that have misled them. It has seemed to me, therefore, that I should have the best prospect of success if I should withdraw attention from the state of facts, actually existing in any nation, and confine my attention to the general causes and influences that are at work everywhere among men, and to consider them as accompanying and modified by the advance in population and in civilization, which takes place as a people grow up from a few savages occupying a large territory, to be a densely compacted people, with no more land at home to bring under cultivation, and no foreign country, to which by way of emigration, they might fly for relief.

11. *Practical value of Political Economy.*

Political Economy is eminently a practical science. Everybody has studied it to some extent and knows something about it. And sometimes it happens that those who actually *know* the least are ready to talk and to guess the most. But it is a science

based on primary facts and general laws inferable from those facts.

Doubtless a knowledge of Political Economy is useful to the citizen who seeks to advance his own pecuniary interest with the greatest certainty and rapidity. The statesman finds it indispensable as an aid to his efforts in promoting the aggrandizement of his country. But "*above all nations is humanity,*" and the true philanthropist, who labors for the best and highest interests of his race, looks to the laws that explain the creation of wealth, and should be allowed to regulate its distribution and enjoyment, for information in regard to the conditions in which the higher influences of culture and Christianity may have free course to run and be glorified in the regeneration of humanity.

The Institution of Property to which Political Economy relates, is the first and most indispensable step in any advance from savagery up toward civilization; and a constitution of society and an organization of the state which allows each one to possess and enjoy the fruits of his own labor and his own skill is scarcely less necessary to any considerable attainment of culture, of civilization, or of social and private morality even among the masses. There is immense moral power in the thought that each one in a community has and is secure in the possession of all that he really deserves as the reward and

1

product of his labors. It gives energy and independence of thought. It gives self-respect and self-reliance, without which other virtues can have at best only a sickly and unproductive growth. This is worth more than the fear of punishment or the mere hope of reward—except as it is itself a reward—in leading people to observe the rules of action and to pursue that course which promotes the truest manhood and womanhood in ourselves.

12. *Subservient to a higher civilization.*

The subject is undoubtedly one of the grandest that can occupy the human mind, and it is certainly one of the most important that can at this time engage the attention of the citizens of this free Republic, or interest the hearts of statesmen and philanthropists any where. The gospel is undoubtedly a good thing—a most blessed thing for humanity. It aims to comfort men under the evils of their fallen state, and to teach them how to make the best of them by converting them into means of increasing the joys and rewards of eternity. But Political Economy—which has been called in derision “the gospel of Mammon,”—is, more than any one science, concerned in removing and extolling the very evils which Christianity aims to help us to bear with patience and spiritual profit to ourselves.

I may say that individually and personally, I have no hope of any great improvement in public or private morals *anywhere*, except as it is to come from the hearty acceptance of Christianity as a means of teaching and bringing men into an acknowledged submission to God as the One Supreme Being and moral Governor of the universe. But I look to science—and to Political Economy more than any other one science—to teach men that the laws of health and happiness in this world, are a part of God's laws also, and that the recognition of, and submission and obedience to, these laws in this life, is one of the most important means towards the promotion of morality and a high spiritual culture in the masses of men, and preparing them for the life that is to come. If the Bible is a revelation of love and mercy, certainly history and science are revelations of law as well; and both must be accepted as modifying each other, and as co-working means toward our highest practical wisdom. Men must learn to submit to law before love can have its perfect work, or mercy can have its final triumph in this world. Possibly this consideration may have led me to speak with more of plainness and warmth, in the following pages, of some of the prevailing social and economical evils of our day, than the calm dignity of a purely scientific treatise would allow.

But I think it ought to be very emphatically

stated and often repeated, that, in the reaction from the past, when the rights of property and capital have been undoubtedly too carefully guarded and held in too high an estimate, it is scarcely possible that the people of our country will not go to the opposite extreme—claiming too much for mere labor, and not sufficiently regarding the rights of capital and the sacredness of the laws by which it is protected.

CHAPTER II.

OF THINGS IN RELATION TO WEALTH.

Of things in relation to wealth—The cost of a commodity—Utility or intrinsic value—Intrinsic value for different purposes—Intrinsic value for different persons—Intrinsic value for different uses—Measure of intrinsic value—Exchangeable value—The product of labor—The average cost of reproduction—Labor increases intrinsic value—The kinds of human wants—Price, distinguished from value—Price determined by value—Supply and demand, as affecting price—Three modifications—Illustration.

In speaking of the things which we daily use and which are necessary to our happiness and well-being, such words as "*utility*," "*value*," "*price*," "*cost*," etc., constantly appear. And of these terms, *cost* is the most frequently used.

13. *The cost of a commodity.*

But the word is somewhat vague. We speak of a thing as having cost so many dollars, or so much money; of its having cost so much labor or pains;

so much time or privation, etc. Hence it is manifest that the word *cost* is not used to denote the equivalent of an object in any one thing or commodity, that may be given in exchange for it.

It must be manifest however that there will be great differences in the laws relating to these different means, as money, time, labor, privation, etc.; any one of which may be given in exchange for an article we may want, and yet be considered as what it costs. We shall do well therefore to leave the word *cost* to this general use, denoting by it any thing, indifferently, that may be done, or given, or endured for the sake of obtaining a means of satisfying our wants.

But for a more correct and scientific investigation of the laws of wealth, and well-being, it will be necessary to find more specific and precise terms for many or all the elements into which cost, utility, value, etc., may be resolved.

For this purpose we shall find three terms in constant use, and of the greatest usefulness, namely—*utility* or *intrinsic value*, *exchangeable* or *commercial value*, and *price*.

14. *Utility or intrinsic value.*

Utility, or intrinsic value, is the capacity to satisfy human wants, and may be an intrinsic value for

either (1) immediate consumption, or (2) for manufacture.

Every object in Nature is considered as having an intrinsic value for something, or as capable of being so used as to minister in some way to man's wants. And if there are exceptions to this rule they are of no importance to our present purpose.

Most objects have intrinsic value for more than one purpose. Wheat, besides being used as food for man, can be used to feed animals, and it has been in some cases used as fuel. It would also serve as ballast to a ship, and as a weight to hold down a trap door, etc., etc. So gold and silver, besides being useful for coin, are used for various purposes of ornament, as well as for utensils in the arts. And were not their intrinsic value too great for other purposes, they would be freely used for many of the more common purposes, for which baser metals are now employed.

15. Intrinsic value for different purposes.

As an example of different prices of an article, arising from different kinds of intrinsic value, that is from being estimated by an intrinsic value for different uses, we have a good illustration in the case of land. At a distance of some hundreds of miles from a village or city, it is chiefly useful for hunting

grounds and for lumbering; at a less distance it is used for ordinary farming, and bears a price accordingly. Within a short distance from such a business place, it may be wanted for garden purposes, and the raising of such vegetables as cannot well be brought in from a distance, and for this reason (among others) it commands a much higher price than the land that, though equally good, intrinsically, is situated at a greater distance. Or if the land be in the centre of a town, it will be needed for building lots, and a few feet will command a higher price than as many acres would sell for, back in the country.

In speaking of the intrinsic value of an article, therefore, we usually speak of it with reference to its value or use for that purpose for which it is chiefly in demand; and that will always be, of course, the utility that gives it its highest value, or that by which it satisfies the most intense want that it is ordinarily used to satisfy.

16. Intrinsic value for different persons.

But the intrinsic value of any article besides being different for different uses, may also be different for different persons, under different circumstances. Food has more intrinsic value to a hungry man in the state of health, than for a sick man who cannot

eat, and who has no occasion for food. A drug has great value for a sick man, but may be worse than nothing, a mere nuisance to the healthy.

17. *Intrinsic value for different uses.*

An object is useful in either of two respects, (1) for immediate consumption, or (2) for manufacture. Bread is useful for consumption as food, flour is good or useful for manufacture into bread.

Manufacture and consumption are both one and the same thing; the baker in *manufacturing* flour into bread, *consumes* the flour as such, although it reappears in another form and with increased value. The man that eats the bread consumes it, but in consuming it, he manufactures it into chyle, chyme, blood, muscles, and finally, by the use of his muscles in labor, into other commodities of intrinsic value, which become articles of worth.

The only difference, therefore, between what we call *manufacture* and *consumption* is this: when we consider the change chiefly in regard to the increase of value given to the article by the change, we call it manufacture. But when we consider its use chiefly with reference to the giving of enjoyment to the consumer or increased value to *something else*, we call it consumption. Thus we speak of consuming coal, in the *manufacture* of iron. If, however, the

slag and the ashes were the most important products, we should reverse the saying and speak of consuming iron ore in the manufacture of coal into ashes.

This results from one of the first principles of Physical Science, namely, that "man can neither create nor destroy a particle of matter." He can only change the form of that on which he operates. Manufacture is obviously only a change of form, and if the axiom cited be true, consumption can be nothing more.

Nor does consumption entirely annihilate the intrinsic value of any thing. It does in most cases, however, destroy a large part of that which had been given to any commodities by the labor of manufacture. Thus leather when made into shoes, or lumber made into cabinet ware, are worth but little as *leather* and *lumber*, whatever may be the value of the shoes, tables, etc.

18. *Measure of intrinsic value.*

The measure of the intrinsic value of any article is the intensity of the want it supplies; but this intensity is not in itself available as a measure for other things. We need something that, thermometer-like, will measure this intensity; and this measure is found in (1) the labor that one will perform, or (2) the privation that he will undergo rather than do without the article.

This last, the privation one will undergo, is, however, of only a theoretical value. No one ever measures it. But the first named is valuable. Labor can be measured. The strength of men is indeed different, but it can be measured. Time, also, which is an element of labor, can be measured. Hence in labor we have a measure of value of the utmost practical importance. It is, as we shall see more fully below, a product of the two factors, time and strength, entering into the various operations of life in variable quantities. And although men differ in this respect one from another, yet the average strength of man is so nearly a uniform quantity through all ages and in all countries, that it gives us a most important element in measuring values.

19. *Exchangeable value.*

Exchangeable or Commercial value, or value simply so called, is the power which any commodity has of obtaining other things by way of exchange.

Exchangeable value is always the product of labor. In the state of nature things have no exchangeable value, only intrinsic value. But the moment labor is bestowed on them they acquire an exchangeable value which is the product of labor, and always bears some relation to it, so that the amount of labor determines the amount of value.

Thus water has no exchangeable value at the fountain where it gushes forth from the earth. But the moment it is dipped up and carried to some place where otherwise there would be none, it is, or may be, sold at a price proportional to the distance and labor of transportation.

20. *The product of labor.*

Exchangeable value arising from labor must be measured by labor, and the formula for this value is the *exchangeable value of any commodity is equal to the average cost of its reproduction.*

This cost will consist of labor and capital. But capital is a product of labor and has its equivalent in labor as we shall see below.

The usual formula, among writers on Political Economy, has been that "*value is the cost of production.*" But Mr. Carey, I think, first proposed "*the cost of reproduction.*" I shall show cause, I think, for adding another word to this formula, and say, as I have just said, the *average cost of reproduction* is equal to the exchangeable value of any commodity.

As a general thing articles will sell for what it costs to produce them. But suppose that at a certain stage in the production of articles of any class, a new process is discovered by which articles of the

same kind and intrinsic value may be produced with half the labor before required to produce them, the price of articles of that class will fall in market accordingly, and the old articles will no longer sell for the old price. Hence the cost of reproduction, and not the cost of production, must be taken as the measure of value.

21. *The average cost of reproduction.*

But we need a further modification. The cost of *reproduction* will vary with time and circumstances. A man who has recently discovered a placer of gold, may be able to reproduce ounce after ounce of the precious metal for days, with only the labor of picking it up and taking care of it. The manufacturer who has had the good fortune to buy a large stock at very advantageous rates, so that he can replace what he is selling at less cost than his neighbors and competitors can do, will not sacrifice his chance to make a larger profit than they do, in order to sell at what it will cost him to replace his wares. Not, therefore, the cost of reproduction merely, but the *average* cost of reproduction is the measure of exchangeable value.

Still, however, for most purposes of ordinary discussion, the shorter and more elementary form, "The cost of production," will answer just as well

as the more elaborate and precise one. And yet we must be on our guard constantly, lest the error that is implied in it mislead us when we least expect it to do so.

Hence God gives to articles their *intrinsic* value, but man gives to them their *exchangeable* value.

22. *Labor increases intrinsic value.*

But the labor of man increases also the intrinsic value; thus it converts the chemical elements of oxygen, carbon, etc., into wheat,—wheat into flour, flour into bread, etc., and at each stage these elements acquire an additional capacity to supply human wants, and promote man's wealth and welfare.

The exchangeable value of an article can never rise above its intrinsic value. For since it is labor alone that produces exchangeable value, no one will continue to labor upon anything after his labor has ceased to increase its intrinsic value, or to make it better and more useful. Hence although exchangeable value and intrinsic value have no common measure, and cannot be expressed in terms of one another, we have an inexorable limit to exchangeable value; for labor cannot raise it above the intrinsic value of the article on which that labor is bestowed.

23. *The kinds of human wants.*

I have spoken of labor as increasing the intrinsic value of articles while it *creates* their exchangeable value; and intrinsic value I have spoken of as a capacity to satisfy human wants. But in all this I have taken no notice of the difference in the kind of wants that may be satisfied. These wants, however, are as various in their character, as the constitution, the characters, the tastes, and even the wishes and caprices of men. It is not at all the nature or the character of the want, that the Political Economist has to take note of, or deal with. He is concerned only with its *intensity*, the *amount* of labor or of privation and self-denial it will occasion. It is otherwise with the statesman. The Political Economist looks only at the effects; the statesman must regard their *morāl* characteristics; and to him, virtue, integrity, patriotism, manhood, and true womanhood are infinitely more important than gold and silver, or all the other effects of a financial policy.

I think that all preceding writers have made a mistake in this respect; and notably so the English, who seem to regard the want of food, and clothing, and possibly sometimes the want of the means of enjoyment of rather a low kind, as the only wants to be taken into account. But the wants of man—those

I mean which are the active, motive forces, may be referred to three classes, (1) spiritual and intellectual, (2) material and physical, such as food and clothing, and (3) æsthetic, such as lead to the creation and purchase of articles of ornament and beauty. Of the first we need say nothing now, although they are among the most powerful, and in certain emergencies of life and of history, they—especially religious enthusiasm or fanaticism,—rise above all others, and replace them as motives to action. The second, or material wants are the ones usually in the minds of writers on Political Economy, when they write or speak on their favorite topics. But a moment's thought will satisfy us that the æsthetic wants of man are as powerful, and enter perhaps even more largely into the motives that impel to labor and self-denial, than the material. I think that more is done and endured the world over, to procure ornament, and the ornamentation of what is sought chiefly for its utility, than for mere utility alone, without thought of ornament, beauty, or the "looks of a thing." Most men would as willingly have no coat, as to wear one that is not becoming to them.

24. *Price distinguished from value.*

Price, is the exchangeable value, as modified in

particular times and places by the relation of supply and demand.

Exchangeable value is created by labor. Price is usually indicated and measured by reference to some accepted standard, as gold, and silver coin, etc., or the currency of the nation.

This distinction between price and value has not always been made. Nay, in some cases it seems to have been avoided, if not even studiously ignored. Thus John Stuart Mill, represents value as dependent on supply and demand in all those articles whose supply is notably limited, and he would apparently reverse the rule in regard to those commodities that can be easily produced, and to whose production there is no necessary or natural limit. He says, "It is, therefore, strictly correct to say that the value of things which can be increased in quantity at pleasure, does not depend on supply and demand, on the contrary, demand and supply depend on it." B. III, Ch. III, § 2.

In another place he says, "If for instance the general efficiency of all labor were increased so that all things without exception could be produced in the same quantity as before with a smaller amount of labor, no trace of this general diminution of the cost of production would show itself in the values of the commodities." B. III, Ch. IV, § 3.

This may be true of Price as he has used the

word. But the general diminution of the cost of production would show itself in something. And what shall we call that something? It is an item of most inestimable value in Political Economy. And yet Mr. Mill has no name for it. Something must decrease with the diminution of the cost of production, and that something, it is, that is always decreasing with every invention and discovery; every change or improvement, that either renders less labor sufficient to produce a given amount of value, or the same labor able to produce more value or wealth; so that with this advance there may be an increasing distribution of wealth, and a correspondingly better condition of the laborers, if there be no unjust interference with the distribution.

In the examples cited, as indeed everywhere else in his treatise, the only difference he makes in the use of the words, "price," and "value," are, that while the former denotes the purchasing power of any commodity in money, the latter denotes it in other commodities as indicated by simple barter.

In certain states of society it is easy to see why persons having certain forms of social and political organization to sustain, should be unwilling to represent value as the creation of labor, or as bearing any constant or necessary relation to its amount. The bare statement of such a doctrine would be too likely to suggest the thought that if this be so, "the

laborer is worthy of his hire," and ought not to be kept in poverty and privation, while they who do but little or nothing are abundantly supplied with the means of gratifying their wants, to be at all a favorite with those who seem to think that *men* were created to produce wealth, and *gentlemen* to enjoy it.

25. *Price determined by value.*

It is a fact of daily observation, that where any commodity is abundant and but few comparatively seeking for it, it is cheap. But in the inverse state of things, when an article is scarce, and many persons are in want of it, it is dear. And thus with no change in either the intrinsic or the exchangeable value of an article, its price may vary to almost any fraction or any multiple of its ordinary amount. And thus fluctuations affect what is called the "*price*" of articles.

But besides these changes there is a something that tends gradually and steadily downwards with every advance in machinery or skill, every increase in the division of labor or saving in the cost of exchanges; and this we call "*value*." And it is no uncommon thing to hear people say of a thing in times of high prices, "it is worth so much." But worth is value, and not price. But again we say,

"it ought not to cost so much," which means that its price is above its value.

26. *Supply and demand, as affecting price.*

It is manifest that the same result may be obtained in either of two ways, (1) an increase of the supply, while the demand remains the same, or (2) increase of the demand, while the supply remains the same. Hence this relation is usually called the *ratio* of supply and demand. And for many purposes it may be regarded as a ratio, in the strict mathematical sense. But for other purposes, though a relation, it is not a ratio. The formula is as follows:

$$P = V + (d - s)$$

This will satisfy all cases. If the demand be greater than the supply, the price will be greater than the exchangeable value, and may rise to the intrinsic value, and then its sale will stop; the price can go no higher. If the supply be greater than the demand, the price will fall and there is no limit to its decline.

When the excess of supply over demand becomes so great that *price* becomes negative, the commodity is regarded as a nuisance, a *dead elephant*, and we are obliged to pay something for getting rid of it. And so on the other hand, if the demand be anything, and the article a necessity of life, as food,

the air we breathe, or the water we need to slake our thirst, the price which the article will command becomes practically infinite; one will give all he has, and do all he can to get it.

Hence the relation of supply and demand cannot be a *ratio*, in the mathematical sense—for the value of a ratio can never be negative or a minus quantity so long as both terms are positive. Consequently, if the relation were *ratio*, the price would always be somewhat above the exchangeable value, however great the supply, and however small the demand.

27. *Three modifications.*

There are three very important considerations by which the relation of supply and demand are affected.

(1) The length of time that must elapse before another supply of any commodity can be produced. Thus a wheat crop, depending upon the seasons of the year, can be reproduced only at the end of another season. If, therefore, the crop should happen to be short at one harvest, the price will rise much more in consequence, than it would if another could be produced within the next three months. This of course implies that there is labor and capital enough to produce the commodity in the shorter time, which however is usually the case.

(2) The length of time during which any commodity can be kept without decay. The gardener or green-grocer, who has fresh vegetables on hand, must sell them soon or they will become worthless by the process of decay. If, however, they could be kept indefinitely, he could hold them, until either the demand should become greater, or the supply less, and thus protect himself against the loss that would otherwise be inevitable. Hence, as a general rule, the longer an article can be kept, without diminution of intrinsic value, the less liable to fluctuations in price.

(3) The third consideration is this: If the article which is short in supply be one that is regarded as a necessity of life, the rise in price will be greater in consequence of the shortness, than if the article were one that could be more easily dispensed with.

Thus, suppose the crop of wheat is short; people are alarmed, and each one becomes anxious to provide for himself. Speculators are anxious to buy, in view of the rise in prices, and the demand becomes greater than it would have been in view of the mere fact of a deficiency in the crop, to that amount. But if the article be one that people can do without, many will conclude to do so, rather than pay the higher price, and thus will be in no hurry to buy. And this disinclination to buy—this

knowledge of the fact that they can do without the article, will check the upward tendency of the price of the commodity.

28. *Illustration.*

To illustrate these relations, suppose that some one should establish a caravansera in the desert, and undertake to supply the travelers with water; the article has great intrinsic value, but ordinarily no exchangeable value. At his caravansera in the desert, however, it would have cost him in the labor of transportation, quite a sum. It would therefore have for him and his customers exchangeable value, and a price.

Suppose now a railroad, or other facility for transportation be built, by which the labor of getting a supply would be lessened; the exchangeable value would be diminished accordingly, and so would the price.

Doubtless he would be obliged to charge something for the use of the railroad; but that fact would not interfere with our calculation; for we shall see bye-and-bye that capital itself can be resolved into labor, and that in paying for the use of it we are but paying for past labor. So that what we pay for, in any case, is only labor—labor performed either in the past or at the present.

But suppose again, that the water is a commodity that will not keep without speedy decay—and suppose, also, that no new supply can be obtained in answer to an order, in less than a week or ten days. Now, if during such an interval, the customers should be fewer than usual, so that the demand should decrease, the price would fall, and he would sell at almost any price, rather than suffer a total loss.

Or, if the number of travelers wanting water should increase, he would raise his price, demand all he could get, and the price might rise up to its maximum—the intrinsic value of the article, totally independent of any change in the exchangeable value, or average cost of reproduction.

CHAPTER III.

OF PERSONS IN RELATION TO WEALTH.

The two elements or factors of wealth—Value in relation to sale and consumption—Wealth considered as distributive and aggregate—Aggregate wealth important to nations, distributive wealth to individuals—The motives by which men are actuated—Different kinds of human wants—All persons considered as laborers—Producers and consumers—Unproductive consumption—Producers classified—The function of agriculturists—The function of manufacturers—Their relation to intrinsic value—Limit to the increase of exchangeable value—Limit to manufactures—Their relation to distributive wealth—The function of traders—Their relation to quantity and intrinsic value—The way in which they increase wealth—Limits to their usefulness—Usefulness of the three classes compared—The function of inventors—All the population referred to the three classes.

29. The two elements or factors of wealth.

Wealth must be considered as the product of two factors, quantity and value, thus

$$Q \times V = W$$

If we know that a man owns fifty acres of land,

we know the quantity of his possessions, but we can infer nothing whatever from this as to the amount of his wealth. Or if we know that land is worth one hundred dollars per acre, we have indeed an expression of its value; but we do not know what is his wealth until we know how much he has of such land; with both factors we can compute his wealth— $50 \times 100 = 5000$, or five thousand dollars.

30. *Value in relation to sale and consumption.*

In this formula we must for the most part understand *exchangeable* value. But there are cases where the intrinsic value is the only one that will fulfill the conditions of the formula. If for example, a man were alone on an island with only a limited supply of any article necessary to life, the exchangeable value of that article would be of no consequence to him since he is out of the reach of exchange; and intrinsic value, the capacity to satisfy his wants, would be the only factor that would enter into the account to modify our estimate of his wealth. If he had only one hundred bushels of wheat or their equivalent in bread, and the intrinsic value of nine bushels is equal to one year of life, we have in this fact a means of measuring his wealth.

And in fact it is one of the fundamental principles of Political Economy, that the intrinsic value of that

portion of the products of one's labor which he consumes, is the only value that enters into the account of his wealth, while in regard to that portion which he sells, the exchangeable value is the only one that is of importance to him.

One hundred bushels of wheat will go as far towards supporting the farmer's family when it is selling at one price, as if it were selling at any other. But for purposes of sale and exchange, seventy-five bushels at one dollar per bushel, are as good as one hundred bushels at seventy-five cents per bushel.

This is a fact that should never be lost sight of, and will come up for application a good many times in our subsequent discussions.

31. Wealth considered as distributive and aggregate.

Wealth may be considered as either aggregate or distributive. By the "aggregate wealth" we mean the entire wealth of community, irrespective of its distribution among the people, and even of the number of people altogether.

By "distributive wealth" we mean the product of the wealth estimated in dollars, or something of the kind, divided by the number of population.

Thus the aggregate wealth of the State of New York, was, in 1850, \$1,765,944,246. Divide this

by the number of population at that time, and we have \$460.86, as the distributive wealth: that is, \$460.86 is the sum which every person would have had, if the wealth had been equally distributed among all the people in the State.

*32. Aggregate wealth important to nations,
distributive wealth to individuals.*

Now it is manifest that any means which can increase the aggregate wealth while the population remains the same, or which will increase the aggregate wealth faster than the population increases in numbers, will augment the distributive wealth. And as the distributive wealth indicates the average amount of the means of satisfying the wants of the people, the greater the distributive wealth, the better the condition of the people, when regarded solely from an economical point of view. And no increase of aggregate wealth that is not greater than the increase of the population, so as to increase the distributive wealth or the ratio between wealth and population, can improve the condition of the people.

Thus, suppose each man's distributed wealth to be \$500, it can make no difference whether he lives in a nation of 30,000,000 inhabitants, with \$15,000,000,000, aggregate wealth, or one of 5,000,000 inhabitants, with \$2,500,000,000, aggregate wealth—

his means of supplying his wants are the same, other things being equal, in each case.

Any increment of distributive wealth for any period, must always be the excess of production over consumption during that period.

When, therefore, production is in excess of consumption, we have an increasing distributive wealth. But when consumption is in excess of production, we shall have a decreasing distributive wealth—or in other words, the people are growing poorer. And, as we shall see more fully bye-and-bye, we have in this, one of the most demoralizing influences that can be at work upon any people in the present state of the world's history.

33. *The motives by which men are actuated.*

In Political Economy all persons are assumed to be actuated by self-interest, or possibly, pure selfishness. We do not assert or deny that this is right, nor pause to inquire how far it is morally right or wrong. We assume it as a fact too universal to admit of any exceptions, that will materially vitiate the conclusions that may be drawn from it, when taken as universal.

We assume, too, that man is averse to labor and privation, and that he will perform the one, or undergo the other, only as he has a motive to do so,

arising from the want of something, that can be procured only by means of labor or privation. He will work and practice self-denial, only as a means to the gratification of some want of his own.

34. *Different kinds of human wants.*

Nor do we inquire into the moral character of the wants that impel men to labor and self-denial—those are questions for the moralists. The fact of such wants—their existence as motives and stimulants to exertion, is all that the mere student of Political Economy has occasion to consider. In reference to the laws of production, distribution, exchange, and consumption, it makes no difference what these wants are, whether it is the want of food to eat, clothing to wear—a house and home for shelter and social enjoyment—books and lectures for mental culture—works of art and articles of *vertu*, for æsthetic enjoyment—jewelry for ornament to the person—an office to gratify one's ambition—a church and religious privileges for morality and the salvation of his soul—a title to satisfy his vanity—or even the means of vicious indulgence and debauchery—for they are all wants, and as such, will impel men to exertion, and the kind of exertion that creates value.

35. *All persons considered as laborers.*

We also assume that all persons need to work in order to get a supply. Some there are, of course—the rich, as they are called—who do not need to make these exertions. But they are so few in any community, in proportion to the whole, that we need not take them into account for the discussion of the general principles of Political Economy.

36. *Producers and consumers.*

Human beings are considered as either consumers or producers.

All are consumers. We eat food—we wear out clothes; and food and clothing are the products of labor. And even in sickness we consume the time of others in taking care of us.

Consumption is of two kinds—productive and unproductive.

The mechanic that makes wool into cloth—cloth into clothes, etc., consumes the commodities that he works up. This, however, is called productive consumption, because the commodity appears the same in substance, though changed in form; and as a general rule with an increase of intrinsic value. This at least is always intended. Hence all manufacture is productive consumption.

37. *Unproductive consumption.*

A case of unproductive consumption, would be that in which a man eats food, wears clothing, etc., and does nothing—or at least does nothing that in any way increases the value of any commodity or in any way increases the wealth of mankind.

38. *Producers classified,*

Producers are of three kinds, (1) agriculturists, (2) manufacturers, and (3) traders.

By *agriculturists*, we mean all those who produce what is called the “raw material.” And we call them agriculturists because the material is produced from the earth, and that in one of the three ways, (1) by animal or vegetable growth, or (2) by mining, and (3) by fishing and hunting, and possibly we ought to say lumbering.

In the two latter cases the material already exists in a form more or less gross, and needing to be brought into market. In the former case it exists only in the form of chemical elements, minerals in the earth and air, and must be collected and combined by the processes of growth and organic combination.

39. *The function of agriculturists.*

The labor of the agriculturist, as such, ceases just as soon as the commodity is collected from the soil and fitted to become an article of trade, to be sold and carried off for consumption or manufacture. And if the producer of the "raw material" carries his commodities to market, he is to that extent acting the part of the trader.

Now it is manifest from this definition, that this class of producers determine the Quantum, or the first factor, of wealth. For since whoever produces the raw material is an agriculturist, as we have defined the term, nothing can become an article of wealth, or pass into the hands of manufacturers without first passing through their hands and receiving from them a portion of labor.

40. *The function of Manufacturers.*

The second class of producers to be considered are the *manufacturers*.

The manufacturers are those who take the "raw material" where the agriculturists leave it, and carry it through the successive transformations it may require, until it is ready for final, or ultimate consumption. Thus, the miller manufactures flour out of wheat, the baker manufactures bread out of the

flour, and the bread is ready for final or ultimate consumption.

In the same way we can trace every article through one or more transformations until it is fit for use.

Now at every stage, the manufacturer adds to the intrinsic value of the article, otherwise, it would be no better for his labor, no body would pay him for the labor he may have bestowed upon it, and he would not perform that labor.

41. Their relation to exchangeable value.

The manufacturer adds to the exchangeable value also, for a hundred bushels of wheat made into flour, sells for more than the wheat itself. Lumber made into cabinet ware, is worth more than the mere lumber. Leather made into boots and shoes is worth more than the stock of which they are made.

This will be understood, of course, as the general rule. But it will often happen that one will expend labor on what is made no better by his labor, but rather worse thereby, and in some cases entirely "spoilt," as the expression is. But this, however, can only occur in exceptional cases, and even then the person who bestows the labor does it for the most part, if not always, with the expectation and belief that the material he works upon will be made

into something that will at least be worth the labor, in addition to the value of the material before the labor was undertaken.

42. Limit to the increase of exchangeable value.

Hence putting this law of the increase of the two kinds of value into the form of a differential equation, and using θ to denote any fraction whose value is less than unity, and denoting intrinsic value by V_1 , and exchangeable value by V_2 , we have,

$$d V_2 = \theta d V_1$$

that is, the increase of the exchangeable value of any article, by any given amount of labor, multiplied by some fraction less than unity, is always equal to the increase of the intrinsic value. Hence the smaller the value of θ , the more beneficial the manufacture. And when θ becomes unity, manufacture has reached its limit.

43. Limit to manufactures.

But the increment of the exchangeable value can never exceed the increment of the intrinsic value. For then the labor would be entirely lost and without reward. We say of such cases, "it costs more than it is worth," the improvement is not worth the labor or trouble it costs to make it.

Here then we have a limit to manufacture as a means of wealth. Manufacturers, therefore, create and determine the second factor to wealth, namely, the value or quality of the commodities.

Hence we have two principles. (1) Up to a limit already pointed out, that is, so long as labor spent in manufacturing can increase the intrinsic value more than it increases the exchangeable value, the more perfect the manufacture, the greater the wealth of the community.

(2) The smaller the number of persons engaged, provided they are sufficient to do all that may be necessary in any community, the better for that community. For, like agriculturists, they add to the number between whom the quantity determined by the agriculturists must be divided, and of course, therefore, the more there are of them, the less for the several persons—the less the distributive wealth of the community.

44. Their relation to distributive wealth.

Hence the wisdom of reducing the number of persons engaged in manufacture as far as possible, provided only that we do not thereby prevent the manufactured articles from being carried to the maximum of intrinsic value.

For since the manufacturers add nothing to the

quantity, they must take a certain portion of that which has been produced by the agriculturists as compensation for their labor, and as a means of support to themselves, and thus, while adding to the aggregate, they diminish the distributive wealth of community.

The case of millers in some communities is an illustration; the farmer carries his wheat to mill; the miller—a manufacturer—grinds it, and takes for his pay one-tenth of the grist. Consequently the farmer has but nine-tenths left. If, now, one miller can grind the wheat for, say, nineteen farmers, he will receive but one-tenth of all the wheat that is raised, and the farmers have each his share of the remaining nine-tenths. But if it should take two millers instead of one, each taking as much when there are two of them, as either would have taken when there was but one, they would take two-tenths, or one-fifth of the whole, and each of the others have left only his share of eight-tenths, instead of the same share of nine-tenths as before.

The case would be the same in principle, if the farmer should pay the manufacturer in money. For suppose wheat to be the only thing he has, and thus to constitute his entire wealth, he would be obliged to sell a part of it to get the money with which to pay the miller, and thus he might as well give the wheat immediately and directly to the

millar, as to make the other exchange first. Or we may generalize the statement, and supposing the agriculturist to be possessed of any number of commodities, he must either give part of them directly to the manufacturer—to each manufacturer through whose hands his commodities pass—or sell the same part to get the money with which to pay the manufacturer for his labor.

Hence, manufacturers, how many or how few soever they may be, are added to the number of the persons in any community, among whom the quantity produced in any community must be distributed—and hence, other things being equal, the more numerous they are, the less will be the distributive wealth in any community. That is, the less there will be for each individual on an equal division.

45. *The function of traders.*

The third class of producers, are *traders*. They are the persons who transport the commodities from the producer to the consumer. And, since in order to do so, they usually *buy* of the one, and *sell* to the other class, we call them traders.

And, besides, transportation is not always an element—it is only incidental—they move the commodity from one place to another, if such removal

be necessary. But the man who buys at wholesale, and retails what he has bought, or who buys merely to sell again, without so much as touching or looking at what he has bought, is a trader.

46. Their relation to quantity and intrinsic value.

Now, the first fact to be considered with regard to traders, is, that they do not add to either the quantity, or the intrinsic value of the articles that make up the wealth of a community.

I do not say that they do not add to the aggregate wealth of a community, so that the community is the richer for their existence—but what I now say is, that they neither add to the quantity of the articles that pass through their hands, nor yet do they improve the intrinsic value of those articles. For example: a dealer buys a thousand barrels of flour in one city, and transfers them to another, and sells them there; the number of barrels does not increase by the way—nor will the flour go any farther towards supporting human life, or promoting human happiness, than if it had been produced on the spot where it is to be consumed.

47. The ways in which they increase wealth.

Trade and exchange then, add to neither of the

factors of wealth, directly, nor can they add anything to wealth, save by *indirect* methods.

(1) By carrying commodities from places where they are produced in abundance and with ease, to places where, though needed, they cannot be produced.

The people of England, for example, must have clothing, and it is cheaper to carry the cotton of the warmer latitudes, than it would be to raise anything that could be produced in England, to supply the place of cotton goods.

The limit to the extent to which traders can in this way add to the wealth of the world, is the difference between the labor of production, at the place of production, and the labor of production at the place where the article is wanted for consumption, minus the cost of transportation to that place.

For purposes of consumption, we are obliged to consider all commodities as capable of being produced, wherever they are wanted for consumption, with a difference only in the labor cost. By the building of hot-houses, etc., etc., we *can* raise tropical fruits here; but it is cheaper to raise them where no such appliances are needed, and to bring them here as articles of commerce.

(2) One man, as a trader, may often do by way of making exchanges, in a given time, what it would take many men the same amount of time each to do, if each one had it to do for himself.

The office of a mail-carrier, is perhaps the best illustration of this principle. One man can carry the letters, etc., for a whole community, with the same ease and time that he could carry his own. Suppose, for example, that there are fifty letters per day from this place to New York. One man can carry them all, as well as for each one to carry his own.

In the same way, the merchant who goes to New York to buy goods, can about as well buy a whole stock for the community in which he lives, as to buy only what he wants for his own consumption. And he thus saves others the expense and labor of going, each one for his own family.

The saving by this means, is equal to the saving of time effected by one man's doing for several persons what each one would otherwise have to do for himself; for "time is always considered as money." If a man is not doing one thing, it is supposed that he will be doing something else, and making the best use of his time.

Since trade adds nothing to the quantity, or the intrinsic value of the commodities it handles, there can be nothing to pay for any labor or outlay of any kind, beyond the limits already stated. So that the moment a merchant goes beyond that limit, and by his labor, raises exchangeable value above intrinsic value at the place of consumption, he would

lose his labor, or his purchase-money, one or both, or a part of each, as he might choose to compute it.

48. Limits to their usefulness.

These are the limits beyond which trade, or rather transportation, cannot increase the wealth of the world. But it may be made to increase the wealth of a single nation, a community, or in individual cases, to a point that bears no relation to the limit just named. England is perhaps an example in point, where trade has enriched a part of the world, far beyond the amount of increment to the general wealth of mankind, by her operations.

It is no uncommon thing to hear persons speak of trade and commerce, as that which makes the wealth. Within the limits spoken of, trade does add to the wealth of the world, but no farther.

It is indeed true that without trade there can be no great amount of wealth, none, or not many, accumulated fortunes, no large or wealthy commercial cities. But when persons speak of trade as creating or making the wealth, they should amend their expression, and say, not that trade *makes* it, but that it makes it to *be here*. It adds something to the amount of wealth in existence; but it does far more towards accumulating it in certain places, and in the hands of certain persons—a comparatively few rich

persons—than it does towards the increase of the aggregate wealth of the world. It is no unfrequent spectacle to see one person, or one community, getting rich at the expense of the rest of mankind.

Hence, still more strongly than in the case of manufactures, the law that, so long as trade is done up to the extent that is necessary for the increase of the wealth of the world in the ways described—or in any other, if there be one—which, however, I do not know of, and cannot even imagine—the *fewer* the number of men engaged in trade, the better for the world: and it will be better generally for each community, also, however great or however small.

49. *Usefulness of the three classes compared.*

Agriculturists, therefore, determine the first factor of wealth, the quantity; and the manufacturers determine the second factor, namely, quality or value; and for the present occasion, we must consider value, as utility or intrinsic value. The trader class, on the other hand, include all persons not belonging to either of the others, who are of *any* use in *any* way; they really add to the wealth of community indirectly, *by saving the time* of the producers—the other two classes. The time thus saved is equal to the labor that can be performed in the time, and is equal to the number of laborers that would be required to perform it.

Traders, without adding to the intrinsic value, do add to the exchangeable value of the commodities that pass through their hands, to the extent of their own labor; and the *limit to the possibility of trade* is the difference between the intrinsic and the exchangeable value of articles as they are when they are finished by the producer. For mere traders cannot force up the exchangeable value of articles above their intrinsic value.

Consequently we are to look upon any measures that tend to reduce the number of men and the amount of capital needed for the trade, and for transportation, the buying, selling, and carrying of the world, as a benefit to the cause of human welfare.

The means of reducing the men and money needed for exchanges, including the cost of transportation and the profits of the traders, are,

(1) Bringing the producer and the consumer of any commodity as near together as possible, so as to save transportation, and every stage of increasing density of population is a move in this direction.

(2) The number of those that are necessary is diminished, moreover, by increased facilities for transportation, as canals, and railroads, steamships, telegraphs, etc.

And the smaller the proportion of persons that will be sufficient to carry exchanges up to this point, the better for the community. For each person that

is unnecessarily so engaged adds one to the divisor, or rather constitutes one of the number that make up the divisor which we have to use in order to ascertain the distributive wealth, one to the number among whom the aggregate wealth must be distributed, without adding anything whatever to the aggregate wealth.

50. *The function of inventors.*

There is indeed another class of persons who at first sight may appear to deserve a special recognition among the creators of wealth, the inventors. They certainly can not be included among the agriculturists, or the manufacturers, though agriculturists and manufacturers are often inventors and discoverers. They are hardly to be considered as traders, and yet their usefulness and function in aiding the creation of wealth, is of the same kind, and comes under the same law as that of the traders.

By their discoveries and inventions they enable men to accomplish results with less time and expenditure than they could have done without such inventions and discoveries. Hence like the traders, by saving time they contribute indirectly to the production of value.

51 *All the population referred to the three classes.*

There remain for consideration, several classes of persons in every civilized community, which do not appear thus far to have been "located," to use a cant phrase.

These are the men who labor indeed, but do not appear to be laboring upon the inanimate, or rather the impersonal objects we have been considering as making up wealth. They may be classed as, (1) teachers, (2) preachers or priests, (3) physicians, (4) lawyers, and (5) officials. Bankers, brokers, etc., are of course traders.

The first then, I think, should be classed with manufacturers. They labor on, or for, *men*, it is true, and man is not usually considered as an article of property, or as having exchangeable value.

But we shall see bye-and-bye that both soul and body, as means and instruments of labor, come under the general law of capital as a means of producing value, and thus have an exchangeable value of their own.

To a man anxious to realize the products of labor by means of the labor itself, often skill, a spiritual or mental quality, is of more value than the tools or machinery. Tools and machinery are worth but little, if anything, without strength and skill to use them.

Now the legitimate sphere of the teacher, is to improve the mind—the skill; and that of the physician, is to improve the body, or strength, and this is true none the less, on account of the fact that he is needed only in case of sickness or accident.

So, too, the preacher and the priest—if he so administers his office as to have any right to subsist at all—is a means of improving the soul, not only promoting the happiness, by the gratification of the religious instincts, but also, by connecting moral teachings with religious convictions and feelings, improving the moral character of the people, and thus increasing their intrinsic value.

As a means of production, the skill imparted by the teacher has a value that is readily appreciated and acknowledged. But the labors of the preacher, the man who makes moral culture, honesty among men, as a contributor to the intrinsic and productive value of man, is not so generally appreciated.

But in his capacity as a teacher and promoter of good morals, he is an economic benefit in another way. Like the policeman who protects our property, and thus saves us whatever time and expense would be necessary to do it for ourselves, and with far inferior results—the preacher, to the extent of the influence of his office, accomplishes the same thing. He helps to make life and property secure, and thus saves us the necessity for much of the time and care

and labor and anxiety, that would otherwise be requisite to protect what we have, and he thus enables us to devote the time and labor to production with increase of results.

The two classes last named, lawyers and officials, belong as I think, with equal certainty, to the class of traders.

The first class, lawyers, are necessary that people may know their rights, how to deport themselves in their dealings with one another. And a lawyer, by being learned in the law, and so, ready to answer the questions of several hundred clients, on the instant of their asking, saves them the time that would be requisite to investigate, each one for himself, or the still greater risk of doing wrong from not having investigated the law.

Officials are those who are engaged in making and administering the laws—including, therefore, legislators, assemblymen, congressmen, senators, etc., judges, executive officers of all grades, and the army and navy; these are necessary to make, interpret officially, and to enforce the laws, so that the innocent may be protected, and all persons may possess, use, and enjoy the products of their own labor.

Like traders, they save labor by making the products of labor secure to the laborers themselves. It will take less labor to support a family when the

laborers are so protected, than when a share of it is subject to the depredations of thieves and robbers, and the earnings of each one is diminished thereby.

Again, they save labor by relieving the population to a large extent of the necessity of providing security against fraud and violence. A "safe" that is burglar proof, if such a thing can be produced, costs thousands of dollars. A police administration that would protect the property, would render this expense unnecessary.


CHAPTER IV.

OF THE FORCES OF NATURE IN RELATION TO WEALTH.

Reduction of prices—Limit to the decrease—The use of tools and machinery—Their relation to the forces of nature—The forces of nature defined—The forces of nature gratuitous—They are inexhaustible—Conditions of their use—Extent of their usefulness—Man's position in nature—Effect of machinery on price—Why not uniform in its influence—Recapitulation and summary—Elements of the labor of production—Land both a tool and a force—Ricardo's theory of rent—Criticisms on the theory—Land never costs more than the average cost of reproduction—How far Ricardo's theory correct—Effect of a limit to the supply of land—What makes the price of land—Land rises in price with cultivation—New intrinsic values with increased population—Increased value of human labor—Exchangeable value referred to its elements—Taxes and insurance—Commodities become cheaper.

52. Reduction of prices.

There are several considerations that tend to reduce the average cost of reproduction with the advance of civilization.



(1) The utilization of *new materials*. The application of iron where only brass had been used before—the introduction of maize or Indian corn, and potatoes, as articles of food, after the discovery of America—the use of cotton as a material for clothing—are all examples of the fact that the addition of any new material to those already in use for the supply of articles *in its kind*—as corn and potatoes for food—cotton for clothing—reduces the cost of a supply of the articles of that class to the consumers.

(2) The second, and by far the greatest, is the utilization of any force of nature by which the amount of human labor needed for the production of commodities of any class, is made less. The application of machinery, propelled by water or steam, to the manufacture of cloth, is an example. Many articles cost less than one-fourth as much now, as articles of the same quality did before this improvement in the process of manufacture.

53. *Limit to the decrease.*

In case, however, there is a limit to the supply of raw material which man can not overcome, we shall have a reversal of this law.

Thus in England the supply of coal is limited, and as the point of exhaustion approaches, the

amount of labor necessary to mine it and get it to market, must increase. And so if the quantity is not actually limited beyond the power of man to reproduce it, as in the case of all forms of minerals, there may be a limitation of another kind which will increase the labor of reproduction. Take for example, the case of whale-oil—and again those vegetable products which require many years to replace them when once exhausted—as pine lumber, and the average cost of reproduction will be an increasing one.

54. *The use of tools and machinery.*

Man as a laborer can do but little without the aid of strength other than his own. Hence we find him, even in the rudest and lowest state, making and using “tools.”

Tools are but implements for utilizing the forces of nature.

Both words, “tools” and “machinery,” are in use. But for the purposes of Political Economy there is no difference between them. In common use, however, we call that a “machine” in which there is a combination of parts, changing relation in reference to each other. While that which consists of parts so united that they do not work upon one another, as in the case of the axe and its helve—the adze

and its handle—the scythe and its snathe,—we call each of these simply a “tool.”

55. Their relation to the forces of nature.

Tools and machines are not forces, but only means for utilizing forces; the real forces of nature, which man has utilized are animals, the wind, streams of water, steam, etc.

A tool is not usually considered as using up this force, nor even of the muscular force of man himself. When a man throws a stone, he uses a force of nature. In pounding and driving with a hammer or sledge, he uses the same force. The savage who hunts with his bow and arrows, and the watch-maker who cuts his main-springs to propel the wheels of the watch, alike use the forces of nature.

A “machine,” on the other hand, running as it always does, with more or less of friction, uses up a part of the force that propels it. It takes some part of the force, as in case of water-wheels and steam-engines, to propel the machinery itself.

56. The forces of nature defined.

The real forces in all these cases, and in fact, the only real forces any where, are substantial objects—water, wind, the earth, and the visible and tangi-


ble objects that are around us. In fact, there is no material object, mineral plant or animal, that is not, in some relations and for some purposes, a force.

The mind of man is a force, and one of the most important forces in nature. Even God himself is a force. But in this connection, we are speaking only of those forces that are subject to man.

And as most of these objects are forces in different senses, and for different purposes, in the various conditions and relations of which they are susceptible, as water when running, air or wind when blowing, steam when confined, iron when magnetic—it is more common to speak of the abstractions—*heat, gravity, electricity*, etc., as the real forces, and no harm can come from such a use of terms, so far as mere Political Economy is concerned. But the fact to be noted is, that neither, tools nor machinery, are forces. The forces of nature, as we have said, are various; they are for the most part, running water, wind and steam, and tools and machines are merely the means of using these forces.

57. *The forces of nature gratuitous.*

Now, the fundamental fact is, that these forces are *gratuitous*, they have no exchangeable value, they cost nothing; and the only cost in using them is the labor of making the tools, machinery and other apparatus necessary for their utilization and use.



This would result from the definition of value, intrinsic and exchangeable, already given. But it results also from another consideration. Take the case of a steam-engine. When we have taken out the cost of the engine, of the fuel, the oil, etc., the labor, if any, in providing for a supply of water, as digging a well, laying an aqueduct, etc., we have reckoned all that costs anything for the running of the engine, except of course, the labor of tending and using it. We bestow no labor on the forces themselves, and consequently they have no exchangeable value; they have intrinsic value indeed, but they cost really nothing. The engine, the fuel, oil, etc., necessary to utilize them, take time and labor, and they cost something.

58. They are inexhaustible.

The forces are inexhaustible. This results from the fact that man can only change the form of materials, he can neither create nor destroy. Nor can he change the fundamental or ultimate properties of bodies. He may expand water into steam; but the steam will condense into water again, and then is ready for another expansion. He may burn wood and coal, and thus convert them into carbonic acid gas, vapor, and residuary earthy matter in the form of ashes; but these very materials will combine

again in the processes of vegetable growth, and form combustible matter, ready to be burned as before.

The manufacturer of cutlery, for example, consumes steel and coal, the coal he burns and consumes, the steel he manufactures into wares that he offers for sale. He uses a steam-engine, etc., in order to utilize the force with which water, heated to boiling point, expands, and the force propels the machinery. But the steam immediately becomes water again, and the elements into which the coal is resolved by combustion, unite again in reproduction of living trees and plants.

59. Conditions of their use.

If now man can accomplish more in a given period by producing these tools, etc., and then using them in guiding the forces of nature, than he could without, this use of machinery is a gain to the cause of wealth. It produces a given value with less human labor than it could have been produced for without.

60. Extent of their usefulness.

To give some idea of the extent of this help to man in his labor, I mention the fact that it has been

computed that the "machine force," as it is called, that is, the efficiency of the forces of nature, and chiefly, water, wind, and steam, utilized in manufactures in Great Britain, is equal to about twenty times the muscular force of all the inhabitants in that kingdom. That is, the people are able, in the aggregate, to do twenty times as much with machinery, as they could do without the aid of these forces which are utilized to them by means of machinery.

But even this must be a very inadequate estimate, for it includes only the use of such forces as water, and steam, and wind, used in the propulsion of machinery. If then we consider the increment of efficiency given to man's labor by the use of tools, as they are called, we should arrive at a very different result, and no adequate estimate of it could be made.

In the analysis of the labor that enters into the cost of the commodities we buy, I have taken no note of the fact that the price of an article is often *for a time*, and at a *particular place*, forced up far beyond what would thus be indicated, by the efforts of what are called "speculators." Doubtless such things occur, and they are as exceptional and abnormal in the estimate of Political Economy, as they are heartless and wicked in a moral and philanthropic point of view.

Political Economy, however, is not responsible for

these things, and can take no notice of them except as of evils to be removed.

61. *Man's position in nature.*

Hence it would seem that man's work in this world is that of an engineer, to guide the forces of nature; to tame and utilize them, and make them do his work for him; to use his strength, whatever it may be, in guiding them, that they may bear his burdens, and draw his loads, push his tools, and drive his machinery for him, rather than to do this heavier work himself; they are the wild horse which he is to catch and tame, and the tools and machinery are but the bridle and the harness with which the brute may be made to drag his loads and carry his burdens, and carry even himself, also, as a rider.)

Human labor may be regarded as a constant factor, but the materials utilized, and the forces of nature subjugated and made available for their production and manufacture, are variable.

Hence denoting the cost of any article in any particular class by C , and the materials utilized by M , and the machine-force by F , we have this differential equation,

$$d(M \times F) = -dC$$

That is, every improvement in the materials utilized, or in the machinery used, will cause a correspond-

ing decrease in the cost of that particular article, and by consequence, in all the articles of its class, and then by degrees, in the cost of all other articles though not of its kind.

62. Effect of machinery on price.

Thus the discovery of cotton and the invention of the machinery for making cotton goods, have reduced the price of all clothing materials, silk and woolen as well as cotton; and by releasing labor from the production of commodities used for clothing, it has increased the supply of labor for the production of other things, and thus reduced their prices also. This reduction in price, however, as already said, will not occur when there is in the nature of things a limit to the possibility of increasing the supply. In such cases the *price* will rise under the law of supply and demand, and the exchangeable value is likely to rise also, because of the increased difficulty of procuring a given quantity of the article, the more we approach the limit of its final exhaustion, until the price shall have reached the highest intrinsic value of the article for any use whatever.

63. Why not uniform in its influence.

Again the reduction in the average price will not

be uniform in all commodities. And in some it may not be apparent because of an increase in the intrinsic value.

The best quality of cloth in market now, may be no cheaper than the best cloth was many years ago ; but then it is better than could have been bought then at any price. In fact this increase in the intrinsic value given to all articles by the superiority in the process of manufacture, goes far to obscure the important law we are discussing.

Again there is another reason why reduction in the average price of articles will not be uniform. It will be greatest in those things in the production of which machinery can be used to the greatest extent, and with the greatest advantage.

Hence the reduction in the price of agricultural products, and of "raw material" generally, may not be very great. In some articles there may be no reduction. And in some, under the influence of the law of limitation spoken of, there may be indeed an increase of price.

And in regard to manufactured goods, the reduction will be most apparent, and if we allow for the increase of intrinsic value or improvement in quality already spoken of, the reduction will be the greatest in the most highly manufactured commodities. And yet, even this difference will not be so great as the difference in extent to which the ma-

chinery is used. And it is quite possible that in some cases the increase in the intrinsic value may be so great that there will be no reduction in the price of the article. In other cases, the article will be poorer and very much cheaper. This is probably the case with shoes and clothing made by machinery. But taking all things together, the general law stated with regard to a reduction of prices just in proportion to a reduction in the amount of human labor, will hold good.

Prices have a wonderful power of equalizing themselves. The release of some laborers from manufactures and trade will increase the number that will be devoted to agriculture, and thus produce an effect on the price of agricultural commodities also.

64. Recapitulation and summary.

Having now arrived at a very important result in regard to the cost of the commodities most in demand in any civilized country, it may be well to recall and recapitulate the most important steps we have taken.

(1) Every object in nature has intrinsic value. The first class of laborers—the producers—give to articles exchangeable value, increase their intrinsic value, and determine their amount.

(2) The second class, the manufacturers, increase

both the intrinsic and the exchangeable value, though the latter less than the former, they determine the intrinsic value, but they add nothing to the amount.


(3) The third class, the traders, increase the exchangeable value, but they add to neither the intrinsic value nor the amount of the commodities they deal with. They add to the wealth of the community only by saving the time and labor that would otherwise be required to accomplish what they, in their appropriate way, perform.

65. Elements of the labor of production.

What we pay for when we purchase an article, is simply human labor. This may be resolved into several elements, in order that the truth of the proposition may be more readily seen.

(1) The labor actually expended by each of the classes, producers, manufacturers and traders.

(2) The labor actually bestowed in making the tools, machinery, etc., by means of which the forces of nature were utilized and made to do man's work in each of these departments—or rather that part of the tools, etc., which was *used up*, worn away and destroyed by the labor actually bestowed on the article, whose price may happen to be under consideration.



In the wages paid to the immediate laborers, as the producers, the manufacturers and the farmers, there is included the three-fold element.

(1) The amount which they must pay for, (a) the food they consume, (b) the clothes they wear out, (c) the houses in which they live, as well as (d) certain other incidental and inevitable personal expenses. Something of each of these items must enter into the cost of the production of every commodity that has exchangeable value at all—and all of them cost labor, or the products of labor, and cost only the labor that is put into them.

(2) That portion of the increment of the aggregate wealth of the community which, under the ordinary name of "profits," goes, or should go, to each laborer as something more than is needed for food, clothing, etc., as specified above, and which by care, frugality, and economy on his part becomes *his* wealth, his private property, his fortune, his means of independence, which he can use as capital to increase the productiveness of his own labor, or as means to promote his own ease and comfort, his culture and the improvement of his own social position.

66. *Land both a tool and a force,*

Among the means that man can or does use, there

is none in more constant use—none more indispensable than *land* itself.

When we consider that food is the first want of man in an economic point of view, the first thing to be sought and the last to be relinquished, when supplies begin to fail, and the further fact that man can eat only that which has been put into organic form, either vegetable or animal, and that no vegetable or animal matter can be produced without the aid of soil—we see at once that soil or cultivated land must be the great force of nature upon which man depends. It is that which makes plants and animals grow for his use.

In the first place, it is necessary for us to consider whether land used for agricultural purposes is to be regarded as a “force,” or a “tool” by which we use the force, and whether in fact it be not both in one. Perhaps we shall find a solution of the difficulty in the fact that it is both, and that the writers have failed of the right conclusion by not properly so regarding it.

Doubtless land is a force; for without man, it brings forth plants, and causes the elements to unite into organic forms, and thus produces results, plants and animals, that are of inestimable intrinsic value.

But it is also a “tool,” an implement, or a machine by which man is able to unite these elements into the forms in which they serve him for food and

clothing, and nameless other purposes, as he could not unite them, and they would not be united, without. He cannot eat the chemical elements, or the mineral compounds. And much of what the uncultivated soil produces will serve him no better. He depends upon the soil for vegetable food, and upon it, too, for the growth of that which will supply him with animal food.

Hence, as a force of nature, it may be gratuitous, while as a "*tool*," or means of utilizing the heat, light, etc., that combine the elements needed to constitute food and clothing, it may have an exchangeable value or be subject to rent.

67. Ricardo's theory of rent.

Ricardo defines rent to be the amount that is paid for the intrinsic properties of the soil.

He illustrated and proved his proposition in this way. At the first settlement of a country, the settlers naturally select the best and most productive lands. In the next generation more land is needed, and land of a poorer quality will of necessity be taken into culture. Land No. 1, that which was first taken up, will come to have a rent equal to the difference between its productive powers and those of No. 2. Soon, with the increase of population, more land is wanted and No. 3 is taken. The rent

on No. 1 now is raised by an amount equal to the difference between No. 2 and No. 3, and No. 2 comes to have a rent equal to the difference between No. 2 and No. 3, and so on until all the land that will produce enough to support the cultivators, or pay for the labor of cultivation, is taken up.

68. *Criticisms on the theory.*

Our answer is two-fold.

(1) First, in regard to the fact, it is not true that the earliest settlers take the most productive land.

They generally begin on the hill slides, or hill tops, where the woods are easily cleared, and where they are free from the dampness and malaria of the lower but more productive soils. So that what they naturally begin with is, on the whole, about the average in point of natural productiveness. Proof of this may be seen anywhere in our country; and in all countries the most productive lands are generally those that need most labor to bring them into cultivation, clear them off, under-drain them, and otherwise make them susceptible of culture.

(2) But in the second place, land, like other commodities that are bought and sold, never costs more, and seldom costs so much as the average value of the labor needed to reproduce it.

In the midst of Africa, or Australia, land in a

state of nature, and as good as can be found anywhere, has, nevertheless, no exchangeable value—no price; nobody buys or sells land there.

But let civilized man make his appearance, clear off the forests, and put the soil in a state for culture, and the land has a price. Let towns be built, and roads constructed; churches, school-houses, etc., be erected—all of them products of human labor—and with every added day's labor on these public improvements, every foot of land rises in exchangeable value.

69. Land never costs more than the average cost of reproduction.

But it never rises above the standard already laid down, the amount of labor thus expended upon it, or rather the average cost of reproduction.

The real estate of New York State, was estimated, in 1850, at \$1,200,000,000. This would pay for the labor of one million of men for four years, working three hundred days in a year, at one dollar per day.

But manifestly that amount of labor would not change the State of New York from what it was when Europeans first settled it, to what it is now. Consequently the State could have been bought in 1850, for less than the cost of the human labor used up in making the improvements upon it.

The real estate of Great Britain is estimated at about \$10,000,000,000: this would pay the wages of four million men for ten years, at the rate of two hundred dollars per year. But that amount does not represent the labor that has changed England from what it was in the days of Julius Cæsar, to what it is now. Nor could that amount, with all modern improvements of tools and machinery, reproduce an England, if we had the raw materials and the opportunity to reproduce it.

The same will undoubtedly be found to be the case with any portion of land that is so large that its inhabitants may be regarded as a nation or community by itself. And this fact is important, for there is no one farm or small tract of land whose price is determined by itself, its own condition, and the improvements upon it alone, regardless of its surroundings.

If now the money value of the real estate of a country be less than the cost of the labor that would be required to reproduce the improvements that are upon it, it is manifest that in buying it we pay for only the labor and not fully for even that.

70. How far Ricardo's theory correct.

It is undoubtedly true, however, that whatever may be our theory of rent, the piece of land which is

most productive, will command the highest rent, whether the superiority in this respect is owing to natural differences, or to the skill and labor of those who have had the direction of its use and culture in past years. To this extent Ricardo's theory is in accordance with fact.

But there is another important fact that the theory overlooks. In case lands No. 1 and No. 2 were perfectly equal in natural fertility, yet any person wishing to use land would doubtless prefer to pay rent for No. 1, which is already under cultivation, rather than take No. 2 for nothing; and the rent in this case would be equal to the labor required to put No. 2 in as good a condition as No. 1 is in already. And this accords with the facts I have just stated; but it hardly accords with Ricardo's theory.

71. Effects of a limit to the supply of land.

There is, however, one modification of the law of "exchangeable value equals the average cost of reproduction," which we must take special notice of sometime, and which may possibly have an application to cases of land as subject to this law.

It is this. Where there is a limit to the possibility of reproduction, price, under the law of supply and demand, will rise permanently above exchangeable value, and intrinsic value must take the place of it in our calculations.

And although there are still millions of acres unoccupied, yet something of the effect and operation of this law is already felt in most of the old countries of the world, and will be felt in each country as its population gets to be pretty dense, and its land quite fully brought under cultivation. Attachment to country, and the cost of emigration, will induce many to pay for land at home, more than it is really worth, more than it would cost to make a new home elsewhere, rather than go to a new country and leave all they hold so dear behind.

72. *What makes the price of land.*

Land, therefore, is both a force and a tool. As a force it is gratuitous, as a tool it has cost man more than the average cost of reproduction, and can be bought for less.

The formula thus far developed, however, will not be sufficient to determine the price of any particular piece of land. For particular pieces we have to take into account, (1) the labor spent on it, (2) the labor spent on the land around it.

Every house that is built in the neighborhood to be inhabited by man; every road that is built, increasing the facilities of getting to market; every public building, as school house, church, etc.; and in fact every public work or improvement of any

kind, adds something to the value of every foot and acre of land in the immediate neighborhood of the place where it is built.

Nor is this influence confined within any narrow limits. The removal of an obstruction in the Hudson river, for example, whereby the time and risk of transportation between Albany and New York, is diminished, adds value to every foot of land in all the north-western part of our country from which any commodity, agricultural or mineral, may come to New York for consumption, or through New York, to enter the commerce of the world.

73. Land rises in price with cultivation.

Another consideration occurs, as modifying the price of land, namely, while all other commodities tend constantly towards a lower exchangeable value, as civilization advances, and population becomes more dense, land, on the other hand, is constantly tending upwards, demanding a higher price per acre, is constantly rising in exchangeable value.

But the exception is only apparent.

In all other cases we buy the finished product, and compare such product with another, as a coat, a hat, or pair of boots, etc., with the same articles as finished and fit for wear, or final consumption.

In the case of land, however, we compare not one

article with another of the same kind, but the same article with itself in different stages of its manufacture.

In an advancing civilization, with a population increasing in density, something is done every year on the land or around it, to improve its value, to carry it towards a higher state of perfection, and to give it an increased intrinsic value, as a means of getting a living and supplying human wants. It is as if we would compare the material for a coat, in the successive stages of its manufacture, from the time when it is but undressed wool, just clipped from the sheep's back, up to the time when it is ready to be put on and worn. Doubtless, at each successive stage, we should find it increasing in value and in price, as at each, more labor will have been bestowed upon it.

47. *New intrinsic values with increasing population.*

There is still another reason why land should be constantly commanding higher prices, in an advancing civilization. To say nothing of its increasing intrinsic value as *building lots*, the products that are raised upon it, even if no more per acre in *quantity*, command a higher price. The proximity to market reduces the cost of transportation and exchanges, so that a given amount of labor on a piece of land, in

a thickly populated district, though the land will produce no more bushels of wheat, etc., will nevertheless, produce more *money*, in consequence of the wheat's commanding a higher price.

It has happened in our country, that while wheat was worth one dollar and a half in New York, it was not worth enough to pay the cost of cutting and threshing it in Minnesota.

The English writers are extremely unwilling to admit this doctrine of rent. In fact I do not recollect a single one of them that has admitted it. Thus Mill (B. I. ch. I. § 2): "Rent is a price paid for a natural agency." It is the result of a monopoly. (B. II. ch. 16. § 1.)

But suppose there were but two men in all England, who wanted any land for any purpose, and one of them was in possession of a tract, had it already cleared, under-drained, fenced, and in all respects in a good condition, and the other could have a tract adjoining, in every respect except these improvements, as good, would not he be willing to give the owner of tract No. 1, as much for his, as it would cost him to clear off a new tract and make the necessary improvements on it, rather than take up the wild, unimproved land? Of course he would; and yet here would be no "monopoly," no limitation of quantity.

Will Mr. Mill say there is a monopoly of improved land? So there is indeed; but what will

the purchaser pay for it? Evidently the cost of reproduction. And what does he pay for? That may be only a matter of theory and of words. I say the labor of production. The amount paid never even equals that amount.

We find, therefore, no occasion to regard land as constituting any exception to our rule, that what we pay for in buying an article, is only human labor, and that the amount we pay in the ordinary course of business, never exceeds the average cost of reproduction.

75. *Increased value of human labor.*

Hence the obvious inference, that what we pay for in purchasing any article is only the *human* labor which has been bestowed upon it, or has in some way contributed to, and constituted its exchangeable value. And this proposition is as true of land and fixed capital, as it is in regard to the other commodities we may have occasion to buy, although its truth may not be so obvious in the one case as in the other. Its application to real estate, however, I shall reserve for consideration in a subsequent chapter.

The proposition just enunciated, that what we pay for is only human labor, is fairly deducible from two of the propositions already established, namely :

(1) Things in a state of nature and before human labor has been expended on them, have no exchangeable value, whatever may be their intrinsic value.

(2) The forces of nature are gratuitous and inexhaustible, having no exchangeable value in themselves, so that whatever their utilization and use may cost us is only the labor necessary to make them subservient to our use.

76. Exchangeable value referred to its elements.

The labor that we pay for in buying any commodity may be considered under several heads.

(1) The labor that was expended by the agriculturist in producing the raw material.

(2) The labor of the manufacturer in converting of the raw material into the finished commodity.

(3) The labor that has been employed in making the tools and machinery that were used either by the agriculturist or manufacturer.

(4) The labor expended in producing the material used in running the machinery, as coal, oil, fuel, lights, etc.

(5) The labor required in producing the food, clothing, shelter, etc., of the laborers while at work on the commodity.

And to these we must for the most part and per-

haps always, add the labor of the trader in transporting it from the producer and retailing it to the consumer.

But this will form no exception to the law just stated. For whatever the trader gets for his share is only the compensation for (1) his time, (2) personal expenses for clothing, etc., (3) capital used, as money, teams, canals, rail-roads, etc., for each and all of which he has to pay something. But they are only products of labor.

77. *Taxes and insurance.*

It is possible that in order to make our statement a little more complete, we ought to add the item of taxes, insurance, etc.

Taxes are imposts on either men or the products of their labor, levied as a means of supporting government; that is, for paying for the labor of those that are engaged in making and enforcing the laws, protecting life and property.

Insurance is money paid to others for sharing our risks with us. I doubt if it really adds to the cost of the articles we buy, in *general*. There will be special cases where we pay something extra for it. But in other cases the cost of articles will be less in consequence of it. But if not, and if there be an item of this kind to be taken into account in esti-

inating the cost of commodities, it goes simply to pay the parties who are in the insurance business for their labor in equalizing the losses that are inseparable from the business relations of men, and in saving the unfortunate from utter ruin, and the consequences of such ruin to those that are employed by or dependent upon them.

But at all events, in any view, it tends to, and centralizes in, the one item—human labor.

78 Commodities become cheaper.

Now from this it results that in the advance of civilization there will be required with a greater utilization of the forces of nature in the use of machinery, a constantly diminishing quantity of labor, to produce given results—with, of course, therefore, less cost to the consumer, or, what is more likely, larger production—at lower rates and a much more extensive consumption, with an improved condition of the people.

It is indeed true that in accordance with a law already stated, there are many exceptions to this rule. When man has no control of the supply of any commodity, and the amount is limited in nature, there may be an increase of exchangeable value, and so of price, as we approach the period when exhaustion is imminent. If it should be as-

certained that the amount of iron that exists in form of ores in the earth was approaching exhaustion, the price of the article would immediately increase.

But it has thus far been found, and I presume it always will be the case, that as one commodity gives out, another will be found. When whale oil was becoming too expensive for use, kerosene was discovered. And when coal gives out, and give out it must *sometime*, I have no doubt some other means of heating will be found to take its place. But we do not need now to contemplate any such result; the period is too far off to affect any of our present theories or business arrangements.

Hence in every stage of an advancing civilization human labor becomes more effective, and avails more and more, in the production of those articles, whether of necessity, convenience, or mere luxury, that minister to and satisfy human wants. And with each such advancing stage, therefore, the price, the actual labor-cost of nearly every article, should be less than in any preceding stage; and in the aggregate, the cost of the means of living and of refinement, and highest culture, too, should be cheaper, more easily obtained, and within the reach of a proportion of the community, which is constantly increasing and will continue to increase until the mearis of comfort and culture and enjoyment,

will be within the reach of all who will *labor* to procure them.

Poverty, destitution, actual want for those that can and will labor need not, should not, exist. Every man's wages should be sufficient to provide for himself, and "those that are of his own household."

natural gas.

CHAPTER V.

OF POPULATION IN RELATION TO WEALTH.

The emergence from savagery to civilization—Tendency of savage life downwards—Civilization or education upwards—Numbers necessary to the use of the forces of nature—Origin and use of capital—Capital represents only labor—The first effect of an improvement—The second effect—The ways in which density of population affects wealth—(I) Division of labor—Saving of capital—Increase of knowledge of materials—Increased skill and dexterity—Adaptation of natural abilities—Saving the time of others—Division of labor implies co-operation—Limits to the division of labor—(II) Saving in the cost of exchanges—Saving in labor and travel—Saving in the cost of roads—Saving in teams, etc.—The saving by living in villages—(III) Increased stimulus to production—(IV) Articles come to have new values—(V) Increase in the proportion of agricultural population—Modifying considerations—Waste in relation to the increase of wealth—Unproductive capital—Moral influence of having the producer and the consumer near together.

It is customary in the discussions of Political Economy, to consider man as having begun his career on earth in the lowest state of savagery, and as

having gradually grown up to the present state of civilization. This assumption with regard to his civilized condition may be all wrong, and in fact, I believe it is so. But we are obliged, nevertheless, to contemplate society as either advancing or retrograding. And for the most part, we have to consider it as beginning at a very low state, and advancing up towards a higher and better one.

79. *The emergence from savagery to civilization.*

Suppose then, a savage population on some island, or in some river-basin, surrounded by mountains, or deserts, or other nearly impassable barriers; they would soon increase in numbers, until the territory they inhabit would no longer support them as savages. One of two things—emigration being left out of the account—must occur. Either (1) they must resort to infanticide, to the killing of the old and the infirm, and very likely cannibalism—or (2) they must go to work, domesticate the useful animals and cultivate the soil.

80. *Tendency of savage life downwards.*

And the alternative is one of tremendous importance. It is one of the turning points, one of the places where the ways divide off, and lead to the

most widely different and most important results. If they are indolent and brutal enough to take the one course—the first named—they become more and more brutalized by the habits to which that course leads them. It deadens the domestic affections, and aggravates all the baser, lower and more brutal passions. It is the beginning of an education *downwards* towards something that is lower than mere brute beasts can ever become. It is the savagery of natural history and of fact, as we find it now in some of the darkest corners of the earth, and in abodes of the most degraded men in some of our large cities. Thus, not the manly, heroic, noble creature which constitutes the savage of the poets and romancers, but rather something “having” as has been said, “nothing of humanity but the form,” is the result of this course.

81. Civilization an education upwards.

But if a man loves his wife and children, his father and mother, an *invalid* sister, or a disabled brother, well enough to go to work and endure the hardships of toil and privation himself, rather than that they should suffer and want, he has taken the step that develops all of nobleness and manhood that is in him, and leads to all of civilization, enlightenment and culture, of which his nature is

capable. Now begins self-control and the development of strength, the subordination of the lower, animal appetites to the higher affections. The institution of property, the idea of law, a sense of duty and moral obligation, all follow from the one first step in this direction. And as the lowest savagery cannot be found or attained, except in a dense population under degrading influences, so, on the other hand, the highest civilization cannot be reached except where the population is somewhat dense.

82. *Numbers necessary to the use of the forces of nature.*

We have seen that wealth is the product of labor guiding the forces of nature bestowed on the things of nature. The labor is performed by man, and men are divided primarily with reference to this labor, into three classes—producers, manufacturers, and traders. Each of these classes however *must* be still farther divided, in order to secure any very great efficiency, and *may* be subdivided many times, with increase of efficiency at each step, for the production of value.

This subdivision requires not only some considerable numbers, but also both division of labor and exchange between the different laborers of the different classes.

Hence, before proceeding any farther with our general subject, we will consider population, or, rather, the number and density of a population in reference to the increase of wealth.

83. *Origin and use of capital.*

Labor is constantly yielding products having exchangeable value. Part of these products are designed and used for ultimate consumption, part of them are designed to be used in the production of other articles of value, and these articles are considered as capital.

Capital is sometimes called *fixed* capital, as lands, houses, etc., in distinction from *moveable* capital, money, etc.

Capital may be referred to three different heads according to the use that is to be made of it. (1) The material that is "worked up" as iron, wool, cotton, etc., which reappears with increased intrinsic value. (2) Tools and machinery by which the products are made, and which are partly worn out in the process. (3) (a) The materials consumed in running the machinery, including coal, oil, etc., and (b) the clothing and food of the laborer.

84. *Capital represents only labor.*

All of these, however, are, as far as any exchange-

able value is concerned, the products of human labor. The material before labor was expended on it has only intrinsic value, and the forces of Nature were gratuitous.

Hence we find nothing in the nature and use of capital to call for a modification of the statement already made, namely, that labor is the only real constituent of exchangeable value. Labor, and labor alone, creates and determines that value. Even the capital used in any operation or process of manufacture or trade is but the product of labor, and represents a number of days' labor which can always and easily be determined by its value, or in other words, its value is determined by the amount of labor it represents. Or, to be more exact in our statement, its value in the market and as denoted by the current average price, is precisely the cost or worth in money of the labor that will be required to reproduce the capital. Not, indeed, the simple labor performed *without* machinery, but the labor performed, and the labor that was represented in that portion of the machinery that was *worn out* in the operation. The laborer puts in present exertion, the capitalist puts in labor that has been performed in days, perhaps in years, gone by.

85. *The first effect of an improvement.*

The first and immediate effect of any improve-

ment in machinery, or in utilizing any new force of nature, is usually seen in an improvement in the quality—the intrinsic value of what is produced—rather than in any reduction of the cost to the consumer.

And so long as the improvement in the machinery, etc., remains in the sole possession and use of the discoverer, or inventor, it is in fact a monopoly and inures to his benefit alone, enabling him to produce commodities cheaper than others, while selling them at the same price.

86. *The second effect.*

But the moment the use is thrown open to the public, it will, by the law of competition hereafter to be explained, bring down the price or exchangeable value of the article thus produced to the extent of the saving of human labor by the improvement in the means of reproduction. And then, as an indirect and remote consequence, it will bring down in some measure the price of all other commodities whatsoever, that are in any way, or to any extent, products of human labor.

Let us see in detail how this works. Suppose a hundred men are engaged daily in furnishing a certain kind of cloth for a certain town. One of them invents a machine by which *ten* men can do the

work, and five of them can make the machines and keep them in repair; thus the labor of the eighty-five men is actually saved to that community.

This is the doctrine usually taught. But I think we often mistake in reference to it. It doubtless takes more men to make and keep in repair the machinery that ten men will use, while using the more complicated machinery of any advanced stage of manufacturing industry, than it would to supply them with the mere tools of the earlier and simpler form of labor. But this is not a fair comparison. We should compare the number of men required to make and keep in repair this complicated machinery, with the number that would be required to perform the same office for—not the ten only, but all those—perhaps the hundred of laborers that would be required to do as much work and to do it as well, with tools and implements such as were in use at the time when the machinery was invented. From this point of view, and it seems to me to be the true one, it is doubtful whether there is really a larger proportion of persons now engaged in making the machinery in use than would have been required in making tools for the much poorer work, which is the best that could have been done, without the machinery.

Now note the consequences of the introduction and use of the machinery upon prices. (1) The

eighty-five men will be thrown out of employment, but they will soon—and not without inconvenience and loss to themselves, doubtless—find employment elsewhere, most of them in agriculture, some in other forms of manufacture, and perhaps one or two in trade. (2) The price of that kind of cloth will decline to nearly the same extent of the saving in the amount of human labor used in making it. Not, indeed, eighty-five per cent. of the *entire* cost, for the improvement spoken of will make no difference with the cost of raising the raw material and of transportation to the manufacturer, or with many of the other items of the cost of the commodity to the consumer. (3) This kind of cloth, being made cheaper, will be in greater demand; many persons that did not and could not afford to buy it before, will now be able to do so; the increased demand will prepare the way for further use of machinery, and a more complete division of labor, whereby the commodities will be further reduced in price.

And what is thus true of one article is true of every other, and of every step and stage of producing or manufacturing it; the law applies as well to the use of machinery in agricultural employments, as in manufacturing. But with this very important difference, however, that machinery can never be applied to the same extent in diminishing human labor in agriculture as in manufactures: the order

is as follows ; most of all in trade and transportation, next in manufactures, least of all in farming.

87. *The ways in which density of population affects wealth.*

Nor does it really make much difference to the wealth of the world where this new labor is performed. Every new article or commodity that is produced anywhere, in excess of the wants of the producer for *immediate* consumption, goes into the wealth and commerce of the world. Like water poured into the ocean, it may be but very little and not affect the level of its surface to any *perceptible* extent, but it increases the amount of water in the ocean, nevertheless. And as prices fall with the increase of supply, so the general effect on prices will be the same wherever the addition may be. Of course the effect will be felt first at the place of production, but like a wave of the ocean raised by the falling of a rain-drop, the wave soon subsides and disappears and yet the surface is raised none the less. The men who raise cotton in Alabama, and those who make cheese in Holland, may not ever make any bargains with each other ; may never in fact even see each other in person ; and yet so long as the cotton-grower in Alabama, or anybody else anywhere, wants cheese, and the cheese-maker, or

anybody else in the world, wants cotton goods to wear, the effect upon the wealth of the world is the same as though they were neighbors and bought and sold directly of each other.

But in order to realize any of these advantages it is necessary to have a large market and a somewhat dense population.

As furnishing another illustration of the importance of a large population, consider another case. We will suppose then that the stereotype plates for this book cost three hundred dollars, and the paper, press-work, etc., costs seventy-five cents for each copy. If now the publisher can sell only one hundred copies, they will cost him three dollars and seventy-five cents a piece. And if he must sell them at one dollar and fifty cents a copy, he is a loser to the extent of two dollars and twenty-five cents a copy. But if he makes one thousand copies, they cost him one thousand and fifty dollars, and if he sells at one dollar and fifty cents as before, he just gets back his money. In the same way ten thousand copies will cost eight thousand and eight hundred dollars, and sell for fifteen thousand dollars, and at a profit of about six thousand dollars.

But the possibility of anything of this kind depends upon a large market, or a large population among whom the commodity may be sold.

Again, the Appletons are getting up an American

Cyclopedia in sixteen volumes. I am told it will cost them three hundred thousand dollars to get it out. If, now, they sell but one thousand copies, it will cost them three hundred dollars each, and they sell it for eighty dollars. Of course, therefore, they must be able to sell many thousand copies before they can get their money back and begin to *make* anything. But this, of course, can not be done except in a country with a large and thriving population.

There are five distinct causes affecting the ratio of increase in wealth, which are dependent upon the density of population: (1) division of labor, (2) saving in the cost of exchanges, (3) stimulation of new wants, (4) the production of new commodities, (5) the larger proportion of the population that can be devoted to agriculture, the more dense the population.

88. I. *Division of labor.*

Division of labor can not be carried to any great extent without a utilization of the forces of nature, and an accumulation of people that make that utilization possible. But as soon as these conditions are possible, it will begin with any people that are capable of civilization.

Even in the savage state there will be something

of it. The woman bears and rears the children, the man does the fighting and hunting. Soon, too, some, from taste and especial skill, will begin *to make* the hatchets and spears, bows and arrows, etc., while others less expert at these mechanical labors will do the hunting, and exchange the products of their labor for those of the manufacturer of the implements he wants to use. Or again, the children and the old men, the sick and the lame, who can not go to war, or do much at hunting, may be able to do much at manufacturing the things that are needed by the hunter. And thus the division of labor begins as soon, in fact, as there are more than two persons living in society with each other. *Society* would be impossible without it.

89. (1) *Saving of capital.*

The advantages are, if one man makes shoes only, for example, he needs only a set of shoemaker's tools; but if he makes shoes at one time, and cabinet ware at another, he will need a set of cabinet tools as well; and thus will require as much capital as two men pursuing the two branches of business, each of them pursuing one branch exclusively.

Tools are always of the nature of capital, and the more of them any man has, the larger the amount of his gross receipts that must be taken from his

capital, in the shape of rent and interest, and hence the less, by just so much, will be the amount left as the wages of his labor, or his profits on the business he is doing.

90. (2) *Increased knowledge of materials.*

An increased skill and knowledge of the materials worked upon, and the processes of working them. Some writers have made this two items.

No man can know more than one or two things thoroughly well. And in all departments of knowledge much remains to be learned. By giving himself entirely to one department, as agriculture, the working of iron, of wool, of cotton, etc., any man is more likely to make discoveries and add to the amount of knowledge already obtained, than he is if he scatter his thoughts over a larger field of inquiry.

91. (3) *Increased skill and dexterity.*

There is always an increased dexterity, or strength of particular muscles, acquired by devotion to one kind of work, a strength that would be impossible without such exclusive devotion.

Any person who has acquired the habit of playing on a musical instrument, is an example of this,

and the type-setter is another. There are also cases of uncommon muscular strength, which result from the habitual and almost exclusive use of certain muscles in one particular way. The acquisition of this dexterity, or strength, or both, requires concentration of effort to one kind of employment.

92. (4) *Adaptation of natural abilities.*

The adaptation of the diversities of capacities to different kinds of labor.

There is scarcely any physical infirmity which does not leave the sufferer as capable of some kind of work, as if he were perfectly whole. A blind man can turn a grind-stone, and a deaf man can set type. A man with defective feet can make shoes, clothes, etc.

And so, too, of mental capacity; the best architect the world has ever seen, could do no more and no better at making mortar or carrying brick, than the common laborer, who could do nothing but make mortar and carry brick; the best of generals would be no better as a private in the ranks, than scores of men that may be found in any brigade, who, however, are fit for nothing but the ranks.

93. (5) *Saving the time of others.*

In a case already spoken of, as in that of the mail-

carrier, one man can do all of that kind of work that is needed, for some hundreds of others, just as well and as easily, as he, or any other, could do it, each one acting for himself alone. He thus saves for them time—and time is an element—one factor of labor, and thus time is money.

We have another, and perhaps a better illustration of this principle, in the manufacture of books and newspapers. One compositor, for example, sets the type. This he can do as easily and as quickly if there are hundreds of thousands of copies to be printed from them, as if there is to be only one. If any man had to set the type for all the books and papers he reads, there would be an end to literature. But in order that we may get all the advantage from this element of the benefits of the division of labor, there must be a large population to be supplied.

94. Division of labor implies co-operation.

This example is instructive in another way, as illustrating the effect of the division of labor on increased production. I buy a paper, we will say at four cents a copy. Labor on an average is worth two dollars per day. I pay thus four two one-dredths or one fiftieth of a day's wages for the paper. Now by a process which I shall make plain and in-

disputable bye-and-bye, we know that that paper has taken only one-fiftieth of a day's work to make it, or in other words, it has really taken but part of a day to make it in, or has virtually occupied in all one man only about one-fifth of a day, or on the supposition of working ten hours per day, about twelve minutes of the time of one man per day, in its manufacture, including raising the material, making the paper, the type, the ink, writing the matter, setting the type, etc., etc., all included.

And the difference between this twelve minutes, and the days and years that it would have taken one man to do the whole, is the result of the division of labor.

Division of labor always implies co-operation as well. In fact it enables all persons in a community to co-operate, each as best he can, in the production of values. And in many cases co-operation is indispensable; two or three men together, can do what no number of men, each working separately by himself, could possibly accomplish; this is, in fact, the case to some extent with all the great works of a civilized community; ten men together are more than ten times that number separately.

95. *Limits to the division of labor.*

There are but two limits, ordinarily at least, to

the division of labor and co-operation, with increased efficiency at each successive step in the subdivision.

(1) Where the labor involved in passing the commodity from one laborer to another, is greater than that which is saved by the operation of the above causes, and more especially the first named, there is no gain, but rather a loss by subdivision.

Thus, in a cabinet shop, one man might do only the sawing, one might use only the jack-plane, a third do nothing but apply a try-square. Now it is manifest, that in such cases there would be more loss of time by the constant transfer from one laborer to another, than could be gained by any of the advantages of the division of labor.

(2) A limit to the demand for the articles produced. This depends upon the want of a population large enough in numbers, and able in wealth, to procure the commodity.

Thus, suppose that in a pin factory, it were found desirable to divide the work into six branches, with one hand each at three, two at two others, and three at the other. If now there were not market or demand for so many pins as these ten men, thus distributed, could make, division of labor could not be carried to that extent without loss.

But for the manufacture of articles requiring the most machinery and largest amount of the forces of nature, a dense population is necessary to create a

market sufficient to allow of the maximum of advantage from the division of labor. And *these articles* are the very ones which are produced in, and characteristic of, the highest and most advanced forms of civilization, and the greatest amount of distributive wealth.

It may be that many of these articles are merely matters of fancy and taste. But the law just stated holds as good of many of the most useful articles as it does in regard to those of mere luxury; the manufacture of cotton and woolen cloths is an example. A large market is as necessary for the best effects of the division of labor in the manufacture of them, as in the polishing of diamonds and the manufacture of jewelry.

And it is in the highest forms of manufacture, the manufacture of the finest and most expensive goods, that machinery and the forces of nature may be made to do the largest share of man's work; and it is in these, therefore, that man's work becomes the most effective in producing value. And we have this general law; the greater the difference between the intrinsic value of the raw material and that of the finished product, the more does man's labor, day by day, increase that value.

It may be that we ought to add one or two more items to our list of the limits to the division of labor, resulting rather, perhaps, from the accumulation of

business in one establishment to which the division of labor and the use of machinery leads, than from the division of labor itself. In any large establishment with much machinery and most complete division of labor, the business itself often becomes so complicated and multifarious that it is beyond the powers of any one man to give it the attention requisite to the highest rate of profit. In this way we may have one counteracting influence to the principles laid down.

Again, there may be such an increase of "waste" in a large establishment as to make it uneconomical. For this reason, or for some other, it seems to be the case that very large hotels and boarding-houses cannot board so cheap, and make a profit, as those that are smaller, and accommodate only a smaller number of guests.

96. II. *Saving in the cost of exchanges.*

The second cause conducing to the increase of the distributive wealth, depending also directly on the density of the population, is found in the increased facility and diminished labor with which the necessary exchanges are made.

Of course there can be no division of labor where no exchanges are made. It is the case in fact, for the most part, that those who manufacture most of

the articles that are in demand in every civilized country, never use any of the articles they make; the man who makes only shoes, for example, wears no more than the man who makes none; the man who makes plows may, in fact, never use so much as one of them, or turn a single furrow. Hence, without the possibility of exchange, there can be no division of labor.

Under this head then there are four particulars.

97. (1) *Saving in labor and trouble.*

The distributive wealth remaining the same, *the labor and trouble* necessary to make the exchanges will be constant, whatever may be the increase or the decrease of the population, so that the labor of making exchanges, provided the distributive wealth remains the same, will be the same, whatever may be the aggregate wealth: and as great when the population is but one to the square mile as when it is five hundred times that number. And then it will be only one five-hundredth part as much for each person, and will therefore take only one five-hundredth part as much of his income in the one case as in the other.

Thus, suppose we have living along a certain road persons at an equal distance of one mile apart, the exchanges between them would be in proportion to

their distributive share of the wealth of the community. Now suppose another man should settle between each of the first, with just the same amount of wealth as they had before, but by the intervening settlements there would be only half the distance to convey it, and, therefore, the labor of carrying it would be just the same as before—twice as much for half the distance.

And so with any increase to the density of the population. And if, as will certainly be the case, there should be any increase of the distributive wealth, there will be a larger amount of exchange indeed; but the labor of the exchange will increase with the distributive wealth, only less rapidly, and not at all with the number of inhabitants living on a given territory.

98. (2) *Saving in the cost of roads.*

But this is not all; there must be not only the labor of making the exchanges, there must also be the labor and *expense* of making the roads over which the travel can take place.

The road between two points is, we will say, ten miles. If now there are but ten inhabitants living on that road, each one must make and keep in repair a mile of road. But let them increase to twenty, and each one will have but half a mile to provide for, and so on.

But they will not live all scattered along on the line of the road; they will settle in neighborhoods and villages, with many roads crossing each other; so that each inhabitant gains by a similar saving on both the roads, the two that cross each other at or near his dwelling. Hence a gain more rapid than the former statement would imply. Smith, in his "Elements," maintains that the saving will increase with the square of the rate of increase of population. But I am unable to see how it is going to increase any faster than the rate of increase in the density of the population.

Sometimes the more dense the population, the better the roads, until we get to the best pavements that can be made in a most populous city, and this will of course cost more than the plain inexpensive roads that answer all the purposes of a rural population; that is, will cost more per mile, and there will be more miles of it. And this is a deduction, a quantity to be deducted from the rate of decrease in the cost of exchange that comes from the increasing density of population. And of course the time will come when canals and railroads are needed and will be built; but this will make no difference with the law just stated.

99. (3) *Saving in teams, etc.*

Then, too, there is always a certain amount of

capital needed in the shape of teams, wagons, canal boats, ships, cars, etc., etc. But these are all only tools, and machines, and can not be used at all without some population, and can not be used to the best advantage, and with a maximum rate of reduction of the cost of transportation, except when there is a very dense population, a population more dense than is to be found now in any country on the face of the earth.

Thus, it costs so much per mile to build the road, and furnish it with rolling-stock. The road and stock thus provided, will do the work for ten thousand, or perhaps for fifty thousand people, as well as for one thousand, and would cost but very little more to supply one number than the other. And when the population, its travel and its traffic, becomes such as to need a double track, it does not cost nearly as much to double its power of work as it did to build it at first.

100. (4) *The saving by living in villages.*

But in the next place, with any considerable density of population, we have the people, especially the manufacturers and traders, gathering into villages, and thus the distance and the cost of exchange, as depending upon distance, for them will be greatly reduced, almost totally saved.

And in regard to the farmers themselves, I think there will be a saving of a similar kind, though probably not so great. The farmer with a village near by, goes there and makes all, or nearly all, the exchanges he may have occasion for; finds there, within a very narrow compass, all those of whom he wishes to buy, as well as all of those to whom he wishes to sell.

101. III. *Increased stimulus to production.*

Then in the third place we have a stimulus to the wants, and so to the industry and exertion, that did not before exist; better clothing, better houses, more extensive and expensive equipages are in demand, and more labor per head will actually be performed on account of this stimulus, than there would have been if no such centre had been created.

Savages have but few wants; the development and culture that comes from any advance in civilization, always creates or develops new wants. And every increase in distributive wealth, has the same effect. We have spoken of the necessities, the comforts, the luxuries of life. But the comforts are always becoming necessities, and what was, in one state of wealth or culture, regarded as only a luxury, comes in the next to be regarded as only a convenience, or perhaps as a necessity.

This, however, is nothing to our present purpose. They are *wants*, and do stimulate to labor and the creation of value.

Nor does the mere advance in civilization bring this result only. By bringing people much into society, so that they see much of each other, they learn wants of one another. A spirit of rivalry springs up which is also an immense stimulus to exertion.

102. IV. *Articles come to have new values.*

The production of articles hitherto of no value, is to be reckoned as the fourth way in which a density of population gives greater facility for the production of wealth.

Many articles will now be raised by the farmer and gardener, in the immediate neighborhood, that were either not raised, or were worthless before. And articles of this kind often become very profitable to the producer.

Now it so happens, that most of those articles that are the most productive in value, most remunerative to labor, are those which will bear but the smallest amount of transportation, especially in a country where the wealth and population have not increased so as to produce railroads, etc. Of this kind, are milk, eggs, green garden-vegetables, etc.

Hence we should naturally infer that the greater the population of the globe or of any particular community, the greater the distributive wealth, or in other words, that wealth will increase more rapidly than population.

103. V. *Increase in the proportion of agricultural population.*

The more dense the population the greater the proportion of them that can devote themselves to producing the raw material. Of this it is to be confessed that we do not see much yet. On the contrary, the whole tendency at present is to avoid farming, and rush into what is called "business" or the "professions."

But we have seen that both the division of labor, and the use of machinery can do far more in the direction of saving human labor, by enabling a few to do that for which many were required before, in the departments of manufactures and trade, than they can possibly do in that of agriculture.

Doubtless, as already said, the first effect of this will be an improvement in the quality of what is manufactured. But in time the improvement in this direction will have reached its limit. And then the persons "thrown out of employment" as the expression is, by machinery, railroads, etc., etc.,

will go to agriculture, and by increasing the number of persons so employed they will increase the *quantum-factor* of wealth far above what it could possibly be if the proportion of agriculturists to manufacturers and traders had remained what it was when the population was less dense and numerous.

Hence, other things being equal, the greater the density of the population in any community, the greater will be the aggregate wealth of that community.

104. *Modifying considerations.*

The qualifying words, "other things being equal," are important to be observed. As a general thing a community in which the people are mostly agricultural is quite poor, for the reason that but little manufacturing is done, and few if any manufactured articles are brought to the highest stage of perfection or their greatest value. But even in this case, the more there are of them, the more they produce.

Again, another change may affect the proposition. Suppose that in any given community, better tools and improved machinery, or more skillful processes should be introduced, so that fifty men could do as much as one hundred could do before. This country would be at least as rich, though a much

less proportion of its inhabitants were engaged in agricultural pursuits; and of course nothing would be gained by any policy that should increase the agricultural part of the community, by a disuse of tools and a return to the more primitive implements and methods of culture.

It will indeed result from what has been said in a preceding chapter (chap. III) that the smaller the number of persons engaged in the two branches of human industry, manufactures and trade, provided these two kinds of labor are performed up to the point of their maximum of efficiency in adding to wealth, the better for that community. They add to the number by which the aggregate wealth is to be divided, in order to determine the distributive wealth. Hence the fewer the better. But any increase of the agricultural laborers, so long as there is (1) either land to be cultivated, or (2) no lack of means to carry the raw material to the highest state of manufacture, is by so much, an addition to the first factor of wealth, namely, the quantity of that which has value, and constitutes wealth. Hence, the more of them the better. But as this last condition can hardly occur in a civilized country, the former is practically the only limit to the profitable increase in the proportion of agricultural laborers.

And even when there is no more land that can be brought into cultivation, more labor may usually be

employed with increase of products on that which is already well cultivated.

105. *Waste in relation to the increase of wealth.*

But along with all these causes that tend to increase the ratio of the distributive wealth to population, there is one very important cause that tends in the other direction, and that is "*waste*."

Of this there is always some, and the amount increases with increasing wealth, and density of population, in two ways.

(1) Persons with accumulated wealth will live in idleness or pleasure, consuming much and producing nothing. What they consume is a "*waste*."

(2) There will always be, in a wealthy community at least, much expenditure over all the needs of thrift, wealth, comfort or culture.

The man who builds a house at a cost of five thousand dollars and then burns it to ashes, gives employment to laborers, indeed, and distributes that amount of money among them. But he does no good to the community; while, if he had allowed the house to remain, and be used for a family home, the community would have had the double benefit (1) of the money paid to laborers for their labor, and (2) the house produced by their labor.

Now, in this way, every man who spends on any-

thing more than is needed, wastes whatever there may be of excess between the two limits, needs and expenditures. The man, for example, who pays fifty dollars for a coat, when one that could be made for thirty would answer just as well, throws away and wastes the twenty dollars as completely as the man whom we have just supposed building a house and then burning it to ashes.

It is indeed true that the money goes into the circulation, but it might as well be paid for no labor or thrown into the sea, so far as the welfare of the community and its distributive wealth are concerned.

With every increase of wealth and population, there will be an increase of "*waste*," which will of course operate to diminish the rate of increase to the increment of distributive wealth.

As an example of this *waste*, I will mention the fact, that it is computed that about one-twentieth or five per cent. of all the labor spent in agriculture, is devoted to raising the simple article of tobacco. Perhaps another commodity consumes another as large a per cent., I mean stimulants in the shape of alcoholic and fermented liquors, opium, etc. And there can be but little doubt that of this one branch of human labor, ninety-nine one-hundredths are waste. One per cent. of it would produce all of those commodities for which mankind is in any way the better off.

Or again: it was reported a few years ago from the Agricultural Bureau at Washington, that it had been concluded as the result of a careful estimation, that the cost of keeping the number of dogs actually kept in the United States, amounted to over thirty millions of dollars annually. I think this an instance of very great waste, for I do not believe that all the skins of all the dogs in the country would be worth at the very highest possible estimate, over the half of one million of dollars.

It is not my design, or my wish, in these remarks to inculcate any mere Gradgrind utilitarianism, or insinuate the doctrine that all that men really need is food and clothing, and the plainer and cheaper the better. On the contrary, I believe that that which is spent, if properly spent, for social, intellectual, and moral culture, and for the refinement of the taste, is among the very best and most proper expenditures we can make. I think that manhood and womanhood, strong and noble manhood, and gentle and graceful womanhood, are the very best and most valuable commodities society can produce; the very best things for which labor and money can be spent. I am speaking only of those expenditures and outlays which consume and dissipate revenue, without accomplishing any of those objects. It makes nobody better, nobody really happier, or more highly cultivated. But it is an immense drain upon the

income and resources of many of the most advanced nations of the earth.

106. *Unproductive capital.*

For this reason many writers, and among them John Stuart Mill, are inclined to speak of capital as not the same as distributive or aggregate wealth.

He regards capital as only that portion of the wealth which they that hold it are inclined to use in aid of labor to be employed in reproduction. And it is this "capital," or wealth in this sense, that, as he says, increases less rapidly than population, so that in all the old countries of the world there are more laborers than are wanted. This may be a fact. It certainly seems to be the case in England. But this will depend upon the ratio of what I call "*waste*," to that which he calls "*capital*."

We have seen that, beyond all question, the rate of increase of the products of labor in England, is greater than the rate of increase in population. If their political institutions and social notions are such as to necessitate or allow of the increase of that portion of the annual increment of wealth, which goes to "*waste*" at such a rate as to lower the increment of "*capital*," in Mill's sense of the word, the result he speaks of may ensue. But who is to blame for it, God or man?

If a comparatively few owning all the land, and monopolizing the increase of wealth, choose to spend it in waste, to employ or not, as they please, their fellow countrymen, to shut them off from every foot of land, exclude them from the mines, and turn them out of the factories in the exercise of their right of ownership, it is certainly true as Mill holds, that it is the amount of "capital" (not wealth) that determines the amount of labor that can be performed, and the number of laborers that can be employed. And of course, therefore, there may be an excess of laborers, not an excess, indeed, when compared with the laws of nature, but only an excess when compared with the pleasure of the British aristocracy. Of course the effects of this kind of waste are much the same everywhere, wherever they occur, whether in London, Paris, or New York.

107. Moral influence of having the producer and consumer near together.

There is also a moral influence arising from bringing the producer and consumer together, by increasing density of population, which it is worth while to notice in passing. When population is dense, and the consumer and producer are neighbors and each acquainted with the other, there is an obligation, not to say a motive, to honesty, which does

not exist where they are unknown to each other. The producer of *shoes*, for example, who is at work in a village on the Atlantic coast, making shoes for the people in the valley of the Mississippi, or still further off, knows nothing of the people who are to wear them, and probably cares little or nothing about them. His object is to make as much money out of them as he can. Hence the temptation to cheat.

But if his ware is to be used by his neighbors, who know him, who buy of him, and of whom he buys in turn, he is bound to honesty and good conduct. For this reason it is, that whenever we go into a shoe-store, or a clothing-store, we expect to pay, and are willing to pay more for an article of domestic manufacture, one made by the man of whom we buy it, than we will pay for what are called "sale shoes," "sale clothes," etc., knowing full well that they are often made to sell, rather than to wear.

CHAPTER VI.

OF RENT AND WAGES.

Wealth the product of three elements—English use of rent, **wages**, and profit—Effects on Political Economy—Really but two parties—Capitalists and laborers—Their necessity to each other—Rent, wages, and profit—The contract between the parties—The law of supply and demand—The law of competition—The effect of these laws on prices—May not act instantaneously—The force of habit on prices—The law of supply and demand will produce a supply—Will distribute laborers to their various callings—Will regulate wages among the different employments—Time a factor of wages—Time also a factor in rent—The result reached by another process—Every laborer wants all he can get—The higher wages of skilled labor—Exceptions to the law—Effect of constancy of occupation—Second law determining the rate of wages—Average cost of reproduction will not explain them—In what sense wages equal in all departments—This just as well as necessary—Different rates of rent—Relation of rent to interest—Rate of interest decreases with increase of capital—Depends rather on value than amount—Important law of distribution—Capitalists cannot defeat this law—Equality between rent and wages—The same result reached in another way—Causes that retard the operation of the law—Predominance of labor.

We have thus far considered the nature and the production of wealth.

108. Wealth the product of three elements.

We have seen that into the production of wealth there enters, (1) the forces and materials of nature, (2) capital used as tools and machinery, (3) labor.

Of these three, the first adds no element to the exchangeable value, or to the cost of the articles to the consumer: the second, capital, in so far as it has exchangeable value or cost, is a product of labor, and may always be resolved into an equivalent of labor.

In most or all the countries of the old world, there are three classes of persons, (1) laborers who own nothing, and are expected to do all the *manual* labor, or "the work," as it is called in the more popular use of language: (2) the aristocracy who own the land and most of the fixed capital, and who are expected to do nothing: and, (3) the middlemen, sometimes called with reference to English usage, "farmers," who own all the movable capital—the money, etc., that is to be used in reproduction—and who are expected to do nothing more than hire the laborers, and look after the general management of the industrial pursuits.

109. English use of rent, wages, and profit.

Hence, of course, there are always three parties

to be considered, and three rival claims to be adjusted in any theory for the distribution of the products of labor and capital. In such a constitution of society these three parts are called, (1) wages, or the portion that goes to the laborers, (2) rent, that portion that goes to the capitalist, (3) profit, or the part that goes to the middleman or farmer.

The fundamental fact in such a state of society is a *landed aristocracy*, a class of men, usually but few in number in comparison, who own all the land, and who, in consequence of their proprietary rights, can give employment or shut out from employment, as it suits their convenience or their caprices, the laborers of the land, and who, by possession of hereditary political rights, or by the limitation of the right of suffrage, possess the power of making the laws and shaping the entire policy of the nation in their own interest. In many cases, and especially in England, this aristocracy have associated with them in interest and sympathy those, who, from among the commonalty, have arisen to the possession of great wealth, or to such an eminent influence as to be a desirable acquisition to their ranks.

If now, this is to be regarded as the natural state of things, one that ought to be perpetuated, nothing better or different can be desired than some of the more recent of the British productions in the department of Political Economy. First and foremost

amongst these is the work of John Stuart Mill. All his examples and illustrations are drawn from such a state of society. It presents nearly all the facts that he takes into consideration, and all of them that he seems to consider as normal and legitimate; and all of his doctrines seem to have been shaped with a view to justify and perpetuate such a state of things, with of course some changes by way of improvement in its workings and results.

Hence, in his opinion, the consideration of utility and intrinsic value is of no account; the distinction between price and exchangeable value of no further use than to give us two terms, where one would answer as well; the price or value of an article is the measure and result of the difficulty of getting it, and not a compensation for the labor that has produced it. Capital determines the amount of labor that will be done, since no man can labor without the aristocracy and the capital of the middlemen: and that there may be capital and profits so that the laborers can be kept supplied with labor, the rate of wages must be kept down. And the lower classes must be compelled to forego the comforts of home and domestic life, lest they become too numerous, and so a burden upon the capitalists.

But surely this is not the state of society amongst us, nor the genius of our institutions. Here we have no "landed aristocracy," in the old-world sense

of the word. We have but very few middlemen and no need of any. Nearly every capitalist performs some labor, and employs as many laborers as he can, if he chooses to do so; and nearly every laborer owns some capital, and is welcome to all he can honestly acquire, and will use wisely and well. And the whole genius of our country and its institutions is to elevate the laborer, so that he may become a capitalist to the extent, at least, of owning all that he needs to use, and is essential to a self-respecting manhood and the management of his own affairs.

Now without attempting, in this place, any comparison of the relative merits of the two systems of nationality, or making any effort to vindicate our own, it is manifest that we must have a Political Economy which is, in practice at least, quite different in many respects from the English.

Theoretically, doubtless, the principles of the science should be derived from facts and definitions that are irrespective of any special nationality, and designed rather to correct and improve those that are wrong, than to perpetuate any one as it is, unless it is just right as it is now.

112. *Capitalists and laborers.*

It is, however, customary to speak of the capital as *owned* by one person, and the labor as *performed*.

by another. This distinction is convenient for the sake of discussion, but it is not essential or important for any law or result. When the capital is owned by one man, and the labor performed by another, some division of the products, some distribution, of what are called the "profits," must be made between them. Whereas, if the laborer owns his capital, he receives the whole income to himself. It is, however, vastly important to ascertain the law that determines the proportion that shall go to each.

It is manifest that each party must have some portion.

113. Their necessity to each other.

The laborer, if he be *only* a laborer, can not work without being indebted to some one else for capital. Not only must he have tools—which he must borrow if he does not own them, (and if he does he is so far a capitalist)—but he must have something to work upon, a piece of ground to till, stone to hammer, lumber to work up, etc., etc., all of which are capital. Since all commodities that have passed from the farmer's and miner's hands have exchangeable value; and all land, for farming and mining purposes, has *now* come to be owned by somebody, and to have consequently a price and an exchangeable value, there is nothing now with which, or on

which, work can be done, that is, not owned by somebody.

The capitalist can not eat what he has, or if he could he would soon exhaust his store and be without supplies. If he goes to work with it, he ceases, thereby, to be simply a capitalist. His true policy, therefore, is to rent his capital to some one who is desirous of using it as a means of producing value; and of course he will do so, only on condition that he can get a share of what is produced.

114. *Rent, wages, and profit.*

We call that portion of the increment of any operation that goes to the capitalist, *when the amount is agreed upon before hand*, and does not depend at all upon the amount of the increment, *rent*; and the other part in this case, we call *profit*, or in case it is a minus quantity, *loss*. Hence if we let R denote rent, P profit, and I the increment, we have

$$I = R + P$$

and as R is in this case constant, we have

$$dI = dP$$

that is, the rate of profits is equal to the rate of the increment.

We call that portion that goes to the laborer, *when it is agreed upon before hand*, and does not depend upon the amount of increment, or the success or

failure of the enterprise, *wages*; and the rest of the increment in this case, also, *profit*.

Hence if we take W to denote wages, and use I and P as before, we have

$$I = W + P$$

and for the same reason as before

$$dI = dP$$

It is manifest that in the first of the two cases, the laborer takes all the risk, while the capitalist takes it in the latter case.

But in some cases the laborer and capitalist provide for a distribution of the increments, whether positive or negative—gain or loss—in some ratio, as half and half, one and two-thirds, etc., etc. In this case the formula is

$$I = P_1 + P_2$$

and of course the differential coefficients of P_1 and P_2 will depend upon the nature of the contract between the parties, and as we shall see, varies by pretty definite laws in different stages of the civilization.

115. *The contract between the parties.*

But the nature of the contract, whether it will be one in which the laborer works for wages, or hires the capital for rent, will depend, in each case, upon the estimate he puts upon his own capacities. If he

thinks that he can make as profit, more than he can get as wages, he will hire the capital and pay rent for it. If, on the other hand, he is distrustful of himself, and fears that for any reason his profits will be less than his wages, if he should hire himself out, he will work for such wages as he can get.

Hence, as a natural consequence, the more intelligent and skillful the laborer, the larger will be the portion seeking to work for themselves on capital of their own, or hired at a low rate of rent, and the more ignorant and unskillful, the larger will be the amount of capital accumulated in the hands of a few.

116. The law of supply and demand.

Before proceeding farther with our general subject, however, let us pause to consider two of the most important and fundamental of the laws of Political Economy, namely, the law of (1) supply and demand, and (2) the law, or rather the fact, of competition. These are the two great laws that regulate prices.

The law of supply and demand supposes people in anxious pursuit of wealth, and each one desirous of increasing his profits as fast as he can [honestly].

If, now, there are two men in a community, doing different kinds of business, and one sees that the

other is making larger profits, and as a consequence, getting rich faster than himself, he will probably quit the business he has been pursuing, and go into the same kind of business as his neighbor, and thus in general :

When there is one kind of business at which men can make money faster than at others, men will quit the kinds in which they are either losing money, or making it less rapidly, and go into that in which they can make it fastest. To this there are certain exceptions, which we shall have occasion to notice below.

The law of supply and demand is, therefore, that where there is a demand there will be a supply ; that is, where there is what is called a demand, the demand is in excess of the supply, the price is higher than the average cost of production, which will of course, therefore, induce people to go into an increase of production.

117. *The fact of competition.*

In intimate connection with this, is also the fact of competition ; the excess of supply can bring prices down only by what is called competition.

So long as price is above the exchangeable value, the producers can afford to sell for less than they do ; that is, at the usual prices, they make more than the

average rate of profit. In this state of things there are many considerations conspiring to induce them to offer to sell at lower prices.

(1) As a general thing, a man wants to sell soon in order to get his money back, to be in readiness to be used again. Under this influence, he will offer to sell a little lower than others, in order to sell before they do.

In computing rates of profit, time enters, as well as increment and capital. We call the profit so much per cent., as six per cent. But if a man can make a turn so as to get this six per cent. once in three months, he is manifestly making money faster than if he could make his turns only once in a year. Hence the disposition to sell as soon as may be.

(2) When prices are high, there is always a danger of their falling, and most always they do fall, in fact, to a figure nearer the average cost of reproduction. Hence persons having goods to sell, are generally anxious to sell before there shall be a reduction in prices. And some one, that he may sell sooner than others, offers to sell for less. They, as soon as they hear of it, "come down" in their prices also, and are in haste to sell before the reduction shall have gone farther.

(3) When prices are high producers are making profit, and of course the more they sell the greater the amount of profit. Hence, in order to sell *more*

they will sell cheaper, until the price comes down to the average rate of profit. And then they will stop, because if they fall in prices any further, they lose instead of making money.

(4) There is yet another motive to competition of a still more general nature. Any person engaged in business is supposed to be desirous of making money as fast as he can. He can increase the amount of his profit in either of two ways, (1) selling at higher prices, or (2) selling more at the same price, if he can do so without a corresponding increase in the cost of production. But he can do the former—sell at higher prices—only in certain conditions of the relation of supply and demand, conditions, which, as we have just seen, will, under the law of supply and demand, very soon regulate themselves.

But it is manifest if one can make and sell a larger number of articles without any corresponding increase in the cost of production, he will accomplish the same result in regard to the amount of his profits. One hundred articles sold at fifty cents each, will bring as much as fifty articles at a dollar each. And the profit on one hundred articles is twice as much as that on fifty, if there is any profit on the manufacture and sale at all. Hence, in order to increase the amount of sales up to the highest amount that can be produced, without undue in-

crease in the cost of production, each producer becomes a competitor to every other man who is dealing in the same kind of articles. Thus each one is induced to "undersell" his neighbor, until prices are so low that the rate of profit will not warrant any further reduction or competition.

118. The effect of these laws on prices.

Hence competition will always bring the price of commodities to the average cost of reproduction. But that is also the point of average rate of profit.

It follows that exchangeable value is the point around which price always fluctuates, and to which it is always tending, and that, therefore, the average of price is always equal to exchangeable value. For when price is above, the very fact will set in operation causes that will bring it down; and in like manner when the price is low, this fact will set at work causes that will bring it up. Like the governor of a steam-engine, either an excess or a deficiency of velocity is made to correct itself and adjust the motion to the proper standard.

119. May not act instantaneously.

But these laws will not act instantaneously: the interference of speculators will often disturb the

operations for awhile, and cause rises and declines in prices, totally irrespective of the laws of competition and the relation of supply and demand. But of course speculators are obliged to act through these laws, and their operations differ from the natural ones, chiefly in the fact that they create the state of facts themselves, on which the laws act ; produce by their operations an appearance of excess of demand, or by withholding commodities from the market, they make a shortness of supply, which there is no natural occasion for.

Again, custom has much to do with regulating prices. The price of any commodity, once fixed, does not fluctuate with every variation in the state of the market. Dealers having the articles to sell prefer to take the consequences—the chances—of slight advances and depressions in the price which an article may cost them, rather than be constantly changing from day to day ; the average of their profits will be as great, with less of trouble to them and to their customers, than with constant fluctuations. This remark holds true, however, of prices at points far remote from commercial centres, rather than in those centres themselves. These variations of price frequently occur, in some articles at least, several times during the same day.

120. *The force of habit on prices.*

This law of competition and supply and demand applies as well to the wages of labor and to the rent of capital, etc., as to any other articles having any price or exchangeable value whatever. But in regard to these, as, in fact, in regard to many other articles, there is often a force of custom or habit that retards the ready conformity of prices to the conditions of the law. If wages, for example, are fixed at one dollar per day, for a certain season of the year and a certain kind of labor, they are likely to remain at that price for some time after the law of supply and demand have been calling for a change. Bye-and-bye, however, the employers begin to think that they are paying too much for their labor, and propose a reduction of wages, and will hire no new hands at the old prices; or, on the other hand, the laborers, if they are free and intelligent, begin to find that they might as well get more than they are receiving, and rise in their prices, or possibly combine in what is called a "strike." If they are right in their estimate of the fact they will succeed. But whenever a change is proposed by either party, or in either direction, its success is certain if the amount be in accordance with the laws above stated. If labor be scarce in comparison with the demand, wages will rise; if it

be more abundant than the demand, it will fall; rise in the one case and fall in the other, until the equilibrium is attained.

121. The law of supply and demand will produce a supply.

We may trust the law of supply and demand for these two results.

(1) It will provide for a supply, whenever there is a demand, unless the possibility of supply is limited by nature, as in case of the metals, etc.

For under this influence the price will rise, either to the intrinsic value of the article in market, or until it is so great that somebody can afford to produce it at the price offered.

122. Will distribute laborers to the various callings.

(2) The law will distribute population among the various callings and kinds of labor, as they are needed in such proportions to each, as will best secure a supply of whatever is wanted.

For, if at any time there are not enough engaged in any particular kind of productive labor, the few who are so engaged will be making more than the average rate of profit, and others will rush into that occupation. And conversely if there be too many

in any occupation, their rate of profit will be below the average, and people will leave it.

And thus we have a law that will solve for us practically, if we will let it have its course, some of the greatest problems in social science.

We are often obliged to contemplate man, not only as acting in regard to self interest alone, but sometimes even as acting selfishly. Still, even this has its good results. Suppose a large city, and a community of people around it devoted to raising supplies. Each man goes out in the morning to buy what he wants for the day, and cares for nobody else. His purchases affect the state of the market, the supply and demand. Each man living in the neighborhood goes into market either to sell or to learn what is wanted. The traders are prepared to buy only what they can sell, and care for nothing else. The countryman thus learns what he can sell, and goes home to produce that article, or rather, the one of those that are wanted that he can produce to the best advantage, and cares for nothing else. But in this way the wants of the consumer are made known; the supplies are calculated and provided for, as no Commissary or Political Economist on earth could compute and provide for them.

123. *Will regulate wages among the different employments.*

Let us now proceed to consider the facts that de-

termine the rate of wages and rent, separately, before we make any effort to determine their relation to one another.

While both parties are desiring to get as much as they can, there is this difference between them; the laborer must have some capital or he can do but little work, and can, of course, provide no adequate supply for his most imperious wants; the capitalist can live for a *while* on his capital, without rents. But while so doing he is using it up, and has poverty before him, and himself fast and inevitably approaching it; the laborer sees this and knows that of course the capitalist dreads poverty more than he does, and fears a diminution of his capital, as a general thing, more than the laborer does the hardships that will result from being out of employment. He can always do something.

Hence, in any contest, although the capitalist may often get an apparent triumph, it can only be apparent; it must be short-lived, and the laborers will inevitably get the advantage, and control affairs in their own way, in the end. This, however, can be the case only when the laborers are intelligent enough to manage affairs for themselves, and when they have the right of elective franchise, so as to prevent any laws being made, or other interference by way of force, on the part of the capitalists to prevent it.

124. *Time a factor of wages.*

Wages is always expressed by a number, which denotes a product into which time enters as a factor. It is so much per month, per year, etc., and as the time per day, as well as the effective force of labor, varies somewhat with the season of the year, there is an advantage in speaking of it as so much per year; and then, dividing that amount by the number of working days in a year, or about three hundred, we obtain a uniform average for a day's wages, which, however ideal it may be in some respects, is important as a means of calculation.

A laborer may be regarded as a machine—his body—if we regard him as a workman earning wages for himself; and the entire man—soul and body—if we regard him as producing value for another.

Considering him now in the former light, his body is a tool, or machine, by which he utilizes the spiritual force that is in him, and constitutes his personality. In this respect he is analagous to a steam-engine.

(1) It cost a certain definite sum to raise him from infancy, up to the time when he could work, just as it cost a certain definite sum to build the steam-engine, and get it ready for work.

(2) And, as in the case of the steam-engine, it

costs something for fuel and oil, so with the laborer, it will cost something day by day for food and clothing.

(3) And as the engine occasionally needs repairs, so the laborer will have sick days and medicines and nursing.

125. Time also a factor in rent.

Now in seeking to ascertain what should be the cost of a machine we take into account these two elements:

- (1) Its cost; what it cost to build it, and
- (2) The length of time it will run.

And if the laborer undertakes to find the fuel and oil, and to keep it in repair, we divide the cost of the machine by the number of days, or years, as the case may be, during which, with good care, an engine will ordinarily last, and the quotient is the rent per day, or year, as the one or the other was used for the unit of the division.

If, however, the capitalist furnishes the coal, oil, etc., and makes the repairs, another estimate must be made of the average amount per day, or year, if the cost of these items are added to the amount above ascertained.

It is estimated that every twenty years result in the completion of a matured laborer, man or

woman. A portion of the cost of developing such a machine is lost by death during this period, and enhances the value of those who do reach maturity. In estimating the cost of raising children to efficient laborers, men or women, we must include the years lived by those who die before the twentieth year, with the years lived by those who reach that age. Simply as a productive machine, a child is worth at any age the cost of its production. The lowest cost of producing a mere animal laborer, is, on an average, not less than \$50 a year. Such a child at ten, is then worth \$500, and the mature human machine, \$1000.

Accordingly, the death of every child or mature laborer results in a great financial loss to the nation. For example: during the seven years ending in 1871, 81,029 persons died under twenty, in the single State of Massachusetts. Their aggregate life periods amounted to 292,762 years, which, at \$50 a year, had cost the nation \$14,638,100—an amount to be deducted, as a dead loss, from the capital of the nation.

126. *The result reached by another process.*

Now, it is not asserted that the laborer actually makes any such calculation as to his wages; and for the most part, he will not, and it is very seldom, if

ever, that he does. But the result is the same as if he did. But this is reached by another process, and, for the most part, without any knowledge of the process, or any conscious calculation at all. The law of competition under supply and demand will work the result for him.

It will be said it is of no use to make any such computations, since the laborer must take what he can get, he cannot dictate his wages to his employer; this is, indeed, true of most laborers taken individually. And it is true of all laborers who are in a condition of slavery or serfdom; deprived alike of all political rights where they are, and of the means and the liberty to go elsewhere. But where no such restrictions exist, there are two important respects in which the competition, or its results obtained by other means, are valuable.

127. Every laborer wants all he can get.

As a general rule, as we have already seen, laborers in a free government like ours, do, and will, control and determine the amount of wages, not, indeed, each one for himself, but the whole class collectively, as a class, by the law of supply and demand.

As between laborers in different kinds of employment, with the consequent difference in wages, this law regulates the actions of laborers individually.

(1) In the first place, a laborer must get enough to supply "running expenses"—so to call it; that is, food, clothing, etc.,—from day to day, or he cannot live and work.

(2) He must get enough to supply four persons, or about that number, or he cannot replace himself and supply a constant population. This arises from the fact that in a family there must be a mother, there will be children, and the laborer himself will sometimes be sick, and will at length get to be old. And unless he can, when in the prime of life and in health, get, as wages, enough to meet these demands, the supply will not be kept good, and under the law of supply and demand the wages will rise until it becomes enough to meet these wants.

But above this, every laborer wants all he can get. He wants leisure and means of improvement. He wants means of educating his children. He wants to have something to serve as capital, and help them to start with. He wants something to leave them as a maintenance when he dies. Hence, as I said before, he will demand all he can get. How much that is, we will see bye-and-bye.

128. The higher wages of skilled labor.

In all cases, when the labor requires any particular amount of skill, the wages are generally higher,

than when no such skill is required for the work he has to do.

This phenomena falls under two heads. (1) The law of average cost of reproduction, and (2) limitation of supply.

The man that needs to spend time and money in acquiring an education, or, having a trade, has expended more on himself than one who has made no such acquisition. And it will take a correspondingly large amount of outlay to educate and fit for work another like him. Hence, as an engine that has cost five thousand dollars, should, and will, rent for more than one that has cost and can be reproduced for three thousand dollars, so the educated machine, physician, lawyer, etc., should and will get more than the man who can do only simple unskilled labor.

If they were to go into a computation like what I have indicated above, they would divide what it has cost them to get their education, by the average number of years during which such men live, and are able to labor, and add that amount to the ordinary wages of simple labor.

And the law of supply and demand will bring them to precisely that result. If, for example, a man as a mason cannot get more wages than a common laborer, none will take the trouble to learn the trade, and hence, from a diminution of the supply

of laborers, there will be a rise in the wages, until it reaches the point where men can afford to learn the trade.

129. *Exceptions to the law.*

To this law there are two exceptions.

(a) When any particular calling is disagreeable, or in disrepute among men, the amount demanded and which must be paid as wages, will be somewhat above what it would be by the above rule, to overcome the reluctance to perform it arising from this cause.

(b) When the occupation is particularly pleasant and honorable, many will undertake it for the pleasure and honor, and thus will serve for less than the mere commercial value of their services. Of this kind are the services of professional men, the devotees to art and science generally.

130. *Effect of constancy of occupation.*

The above statements apply to cases in which wages are computed by the year. When, however, we have occasion to compute by a shorter period, as by the day, hour, etc., there is often another element, that comes in to modify the result, which is sometimes called the *constancy* or steadiness of the occupation.

Thus masons can seldom get work all through the winter, their wages will, therefore, be higher in proportion during the summer, and the weather when they can work. Physicians, and men of that kind, are liable to very great irregularity and inconstancy in the occupation of their time. They charge more per hour than if their occupation was constant.

Or again, when any kind of business is positively unhealthy, men will charge for their time, a sum in proportion to the time they are likely to lose by sickness.

131. Second law determining the rate of wages.

The second law arises from the limitation of supply for the demand. This law applies to men of extraordinary gifts only, the great men in any department, are few and never in excess of the demand. Hence they can demand for their services what they please, and they usually get it.

In an ordinary lawsuit, for example, a lawyer of ordinary capacities will answer all purposes. And he cannot charge exorbitant fees, for there are so many that can do the work as well as he that their competition will deprive him of work altogether, unless he will work as cheaply as they. But in one of those cases where large amounts are at stake, and the cause one that requires the greatest skill, the

men who have that skill are so few that they can demand almost anything they please, and the prices such persons can command have no constant ratio to the expenses of educating them. The only limit to price in such cases is intrinsic value; it cannot rise above that.

132. Average cost of reproduction will not explain them.

Writers on Political Economy have usually attempted to account for the exceptionally large fees or salaries that such persons get, on the same principle—the average cost of reproduction—as they apply to ordinary cases. But I think they fail, for two reasons :

(1) It often happens that such extraordinary persons have expended no very great amount on their education; they rise to their eminence by virtue of some natural gift, and with no more than the ordinary means of education and no more than the ordinary amount of labor and study in preparation.

(2) But generally no amount of labor, tuition, or expenditure of any kind can make such men “to order.” A state may be in never so great need of great statesmen or a great general, and it may have all the appliances and means for educating and “making” them. But they will not come at its call.

It may be in "perishing" need, but its calamities and its clamors alike pass unheeded, unless there be some one God-made man adequate to the emergency, and then he is invaluable, worth more than all other men without him.

133. In what sense wages equal in all departments.

Leaving now this last class out of the account, and taking note only of the great mass of laborers, the common run of men, such as exist or can be produced by education to any extent that may be wanted, and we have the law that

"Taking the cost of education into account, the wages of labor in all departments will be equal."

If there is no outside influence, no misgovernment, no unjust legislation, the thing will take care of itself and come to this result; the law of supply and demand is good for that.

134. This just as well as necessary.

I have been aiming in this discussion to point out and discuss the laws that regulate the different rates of wages that are paid to men in the different callings and occupations of life, rather than to show the justice of what they will get, to show what will be, rather than what ought to be. It may be

worth while, however, to pause for a moment to show that what will thus occur, is just and right on the fundamental principles of justice.

It is not an uncommon notion among the laborers of the lower order, that they do all the work and get but a small share of the wealth. But work to be effective, requires brains as well as muscle, good calculation as well as diligent toil. And we often see that a company of ten men, for example, with one man to plan and guide them in their work, will accomplish a good deal more than one-tenth more than they would with no such guidance. They are more likely to accomplish twice as much with him as they could without, thus showing that he is really the most effective laborer of them all, perhaps, more effective than them all.

135. *Different rates of rent.*

The same laws, in general, will regulate the rent that will be paid for capital, as compared with the wages of labor, and for one kind of capital when compared with another.

There may be objects that, like Niagara Falls, are unique and cannot be reproduced, which will fix their own price, irrespective of the cost of reproduction, since reproduction in such cases is impossible, and the only limit to the price they command is,

as before, intrinsic value; the price of a thing can never rise above that.

But with this exception, all articles of property will rent for the average cost of their reproduction, divided by the time during which it will last, subject as before, to the two conditions of desirableness or undesirableness. A man will often give more for a house that is pleasantly situated, or a machine that is beautiful to the eye, than for one that is just as good, but does not please him as well.

As in the case of laborers, if the kind of business be one dangerous to life and health, the laborer will get more wages; so with property of any kind, if it be particularly liable to injury or loss, the amount of rent will be higher.

136. *Relation of rent to interest.*

It is customary in fixing rent, to have regard to interest paid on money. And, in fact, the two, interest and rent, obey the same laws. Money borrowed, can easily be used to buy machinery with. Hence, under the law of competition, if the one were at any time higher than the other, the demand would change, and bring them to an equilibrium. Rent on capital, however, is always a little below interest, for in the case of money, there is always expected a return of the same amount of value. And the con-

tract is made on this expectation. But in the case of other articles of property, such as houses, oxen, machinery, etc., it is always expected that it will be worn by the use, and thus returned in a state of somewhat diminished value.

It is better, therefore, in order to get at the law determining the rate of rent, to get first at the law determining the rate of interest. And here we must take note of the fact that in most cases of borrowing and trading between man and man, there is some uncertainty about getting back what had been lent. And hence an extra sum is charged as insurance against the risk of loss. Still, however, the average rates at which money can be hired on first class securities, is near enough to absolute interest for all our present purposes; and we have the law.

*137. Rate of interest decreases with increase
of capital.*

Let us suppose a laborer with no implements, but (to simplify the case) with plenty of land, free of rent, to cultivate. His neighbor, a capitalist, has hoes; the gardener finds that with a hoe he can raise twice as much as without, other things being the same. He can afford to give one-half what he could raise with the hoe, for the use of it, which would be one-

hundred per cent. ; that is, he would give for the hoe, as much as he could produce without it.

Now, without going through all these stages, the time will come when capital is abundant, and when every laborer in consequence will have enough of his own, so that he will not want any more ; that is, he will have all the tools and machinery that he can use in his business with any advantage—with any increment to the efficiency of labor, and therefore he will give nothing for any increase ; capital will command no rent, money no interest, from him. Doubtless there will be stages in the progress of improvement, times when great discoveries are made, when a new machine or something of the kind will cause an exception to the general rule. The average tendency of interest and rent, when reckoned, as is usual, in the per cent. of capital, is downward ; for the reason that at each successive stage the added implement or improvement will give only a less increment to the efficiency of labor, until we arrive at the period when there is no other implement that can be bought that will give any increase to the efficiency of human labor.

We have, then, the following as two general laws :

(1) With every stage in the advance of civilization we find that human labor becomes more valuable ; that is, a given amount of it, with the use of machinery, (which is always increasing,) will pro-

duce a larger amount of intrinsic value. Or if, as in a preceding section, we take labor as the standard, then we have the law, as there given, that with advancing civilization the price of all commodities tends to become less.

(2) Under the same conditions, the rent on capital becomes less with each advancing stage of civilization, until we reach the limit, when it is nothing.

138. Depends rather on value than amount.

In considering the rent on capital with reference to this law, we must always take the value, rather than the amount, as the basis of our calculation. The rent of a farm, for example, may be but a few hundred dollars, in a new country where people are but few and land cheap. But let the population increase in density, and the land, though the same in quantity, becomes more valuable, and it may rent for as many hundreds of dollars as it did for tens before. And yet, doubtless, the rent will be only a smaller per cent. of the estimated value of the land.

This results, also, from the law already established, namely: that rent or interest is a less per cent. of the cost of all commodities as civilization advances, and wealth increases; notwithstanding, the capital thus used increases the efficiency of the labor, so

that more is produced with it than could have been produced without. The laborer gets the share due to labor. And while human labor is but a decreasing element in the production of each particular article—so that the articles come to be cheaper, and cheaper—the labor produces an ever increasing number of these articles, so that what the laborer gets, is a much larger number of articles with equal, perhaps greater intrinsic value, at a much less and constantly decreasing cost. He gets more and more of the necessities of life, and whatever he may happen to want to use with a day's labor, with every step in the advance of civilization.

Hence, with regard to the capital itself, being but the distributive wealth, so long as it is increasing faster than the population, after a certain stage in the progress, it becomes a supply, increasing faster than the demand. Hence the price—rent or interest—must fall, whatever may be the average cost of reproduction.

139. Important law of distribution.

From these considerations, we have the important law, namely:

That while the total increment is constantly increasing with increasing density of population, and the accumulation of capital, giving an increase of

both aggregate and distributive wealth, and a greater amount of increase to both the capitalist and laborer, the proportion of the increment which goes to the capitalist, is a decreasing one, and that which goes to the laborers, is an increasing one.

Or, to put the same thing in another form, rent grows less and less in proportion to the value of the capital rented, and labor is constantly commanding a higher price, and the laborers are getting more and more wages.

And this process, of course, tends to elevate the laborer, and to equalize the distribution of wealth between him and the capitalist.

This change will show itself in the increased ease and frequency with which persons, starting in life with nothing but their hands and their brains, will rise to the possession of wealth. It will show itself also, soon, and about as soon, in the improved condition of the mass of laborers themselves.

140. Capitalists cannot defeat this law.

It is a very common notion, that if capitalists choose to keep their capital in their own hands, they can make their own terms, and demand what rent they please. It is a very common opinion with Political Economists, as well as with others, that capital is more than either brains or muscle, and

rules the world. But we answer that they cannot keep their capital in their own hands. When, as in this country, there is no privileged class, such a thing is impossible. I have already shown how in that case they would consume it and come to poverty, and in ceasing to be capitalists, they must become laborers, and be obliged to go to work.

It is a political and a physical impossibility for any number of capitalists to hold the land in unproductive idleness. It must be cultivated in order to produce crops; the laborers, therefore, will have it to cultivate. And if they cannot hire tools at prices below their intrinsic value, that is, for the same as, or less than, the difference between what they can do with and what they can do without, they will *do without them*, and do something too: begin where our savage ancestors began; use a sharp stick for a hoe, a flat stone for a spade, and a pine knot for a plough. And next year they will have better tools from their own manufacture and no thanks to the capitalists. No class combination or civil power on earth can prevent this. This, however, is an extreme case. As a general rule, the law of supply and demand and of competition will regulate this, and bring rent and wages to an equilibrium. Neither class will commit suicide, least of all the capitalists.

141. Equality between rent and wages.

Suppose, for example, rent is too high, that is, so high that a laborer of average capacity will have less remaining as profit at the end of the year, after having paid his rent, than he could have had if he had worked for wages; we shall have a large supply of laborers for wages, and a small demand for capital to rent. Rent will, of course, come down in obedience to the law of supply and demand. Or suppose, on the contrary, that rent is so low that the profits to the laborer, after paying it, will be more than wages; capital will be in demand, and rents will go up. And thus the thing will regulate itself and that law of justice between man and man will be found by this means, which no man, by abstract reasoning, has been able to discover.

142. The same result reached in another way.

We may reach a similar result in another way.

Suppose it takes two days to make a spade, and a spade will last only one day; the capitalist puts in two days to the gardener's one, and is entitled to, and will ordinarily get, two-thirds of the products of the day's labor. If the spade will last a season of one hundred days, the capitalist puts in but two

per cent., and so in proportion will retain his share of the increment as rent, accordingly.

Now all capital is in this way the product of labor. And the capitalist is supposed to have produced it by his own labor. It is in this way that he does his part in the work of creating wealth and producing a supply for the wants of mankind. And although we cannot always compute the amount of labor that any article of capital has cost, yet the law of supply and demand, wiser in this, as in most things else, than our most profound calculations, will bring us to the just result in all cases.

If a man can make more money by making tools than by using them, he will go to making them instead of using them. This is of course the general rule.

143. Causes that retard the operation of the law.

But some there are, who, having learned one kind of trade, or for other reasons, being attached to one particular mode of life, will continue in it after his income in it has fallen below the average rate of profit, to which all forms of industry, all kinds of trades, and, as we have now seen, even the competition between capital and labor itself, always tends.

If any kind of labor has become, in the common expression, a "bad business," "does not pay," the

old may continue it, but no young men seek it as a calling and the middle-aged, who can do so, will seek some other means of providing for their wants. Not choice or taste, only, determines man's actions in this life. Often there is a necessity for him, to which, although here and there an individual may resist it, the mass must at length submit, whether they choose to do so, or not.

And if, in any cases, persons complain of high rent, or low wages—complain that rent is above the value of the property, or wages below the value of their services—they must remember that they compare property by one standard, when they complain, and by another, when they make the bargain. If they give more than the average cost of reproduction for rent, it is because the article rented has, in their estimation, another value, besides its mere commercial one. And, if they work for less than their labor is worth in money, it is because they get something else than money, as fame, gratification of taste, the consciousness of benefit to others, as the consideration on account of which they work.

144. *Predominance of labor.*

We have seen that human labor, however aided by the forces of nature, is the only thing that enters into our estimate of value, and that with each succes-

sive stage of an advancing civilization the proportion which this bears to the forces of nature becomes less; therefore the value of each of the articles that constitute wealth decreases.

For the same reason, as well as for the one given, rent and interest will decrease also. And the only exception in the case of rent is that in which the exchangeable value itself, as in the case of land, is rising by labor bestowed upon or around the rented property.

Hence in this world labor is king. He that will do the work must and will enjoy the proceeds of his labor. Such is the law, and all nations are tending—slowly, perhaps, but surely and irresistibly—towards its realization. The abolition of hereditary distinctions and privileged classes, with inherited political powers, has cleared the field of all obstacles to its fair play and full operation in our own country, and the most advanced nations of the old world are drifting into the same current, and must finally come to the same result.

CHAPTER VII.

OF EXCHANGE.

No exchange without division of labor—Exchange between those who use tools—Tools the result of past labor—How determine their value—Tools reappear in other articles—The basis of exchange—Elements of labor represented in any article—Basis of estimate between the buyer and seller—The gain by the exchange—The money-price of but little account—In what respects important—The benefits of exchange—The cost of exchange—Who bears the cost?—Cost varies with bulk and weight—Commercial centres determining prices—How determined at the centres—Effect of the rising of new centres—Of centres of production—Cost distributed between the producer and the consumer—The only way of escaping this result—What is sold determines the price of all that is produced—It determines also the price of all other articles—A common mistake with regard to the benefits of trade—Thrift determines the amount of exchanges—Benefits of proximate exchanges—Articles should be manufactured at a place of production—Difference in facility for manufacture and production—The great wealth of commercial centres—Inferences in favor of free labor and free trade—Governments not satisfied with this—
I. Monopolies, copy and patent rights—II. Usury laws—Arguments in their favor—III. Tariff, for revenue—Objections to it—Effect of tariff on importations—What makes a tariff protect-

ive—Effect of a tariff that is below protection—Limits within which protection is possible—List's doctrine—Protection and national independence—Diversification of industry—Free trade reduces the wages of the laborers—The evil effects of low wages on the laborers—Beneficial effects of the higher manufactures—Free trade only with free laborers—Difference between British doctrine and British practice—John Stuart Mill advocates protection—Classes of persons that are not likely to favor protection—Political motives that may oppose it—Probability of the continuance of protection in America.

Division of labor in the utilization of the forces of nature in the production of wealth, depends upon the possibility and the prospect of exchange.

145. No exchange without division of labor.

Exchange is the giving of one article having exchangeable value, for another having the same kind of value. Sometimes these articles are changed immediately by the producers of the respective articles themselves, and in that case it is called "barter." But as this is inconvenient, all civilized nations, and most savage nations, in fact, have found some means of exchange called money, for which the producers sell, and with which consumers buy whatever they choose to make the subject of exchange at all.

But unless persons could make exchanges, each one would be obliged to give his attention to the production of that which he would need for his own

consumption, and no accumulation worth speaking of would be possible.

Exchange must, therefore, begin to take place in some form, at the very inception of civilization. It takes place between the members of the same family. When, for example, it is arranged that the wife shall have charge of, and do the work in the house, and the husband, in like manner, see to, and do the out-door work, there is an exchange of labor; or, what is the same thing, the products of labor, between them. And thus exchange is the basis of division of labor, and begins even in the domestic circle.

146. *Exchange between those who make, and those who use tools.*

But as soon as fixed habitations are commenced among men, diversity of employment comes in, of necessity. Some will *make* tools, others will *use* them. Soon we have the makers of tools divided into trades, as shoemakers, tailors, blacksmiths, carpenters, masons, etc.; and those who use the tools, will also accustom themselves to different employments; and a large share use tools that have been made by others, while making tools for others to use.

Take a single example for an illustration: the

carpenter uses, we will say, a hammer. He makes with it a house, which is a tool to live in, a barn, which is a tool to house crops in, and the stock of the farm, etc. But then, the farmer produces wheat, etc., which is but a tool to produce human bone and muscle, and the bone and muscle are but tools to produce other commodities, the products of labor. And thus, in a most general view, everything, except the soul of man—the intelligent moral agent in the body—is but a tool by which that soul controls and uses all else below, for its own purposes.

147. Tools the result of past labor.

But let us consider the hammer a little farther.

And first, in a backward glance, we see that the tool is the product of labor; a laborer of one kind made the handle, and a laborer of another made the head. But those who made the handle used tools partly of wood and partly of iron and steel. Hence then we are on the track that leads back to the lumberman and miner. But the lumberman and miner used tools—tools consisting of parts of wood and iron,—which lead our thought farther back to other lumbermen and miners before them, and so on to the first man that ever performed a single stroke of labor on this earth. A small fraction of that labor—infinitesimally small, indeed—appears in every

article we use or enjoy to-day, and will do so to the end of time.

And in buying the hammer, for example, the carpenter pays perhaps a dollar. But that dollar goes to pay for the work done by each and all this endless line of co-laborers in its production; and some part of it is the compensation for each man's share, from Adam the first man, to Smith the hardware merchant, of whom the carpenter bought it for the aforesaid price.

148. How determine their value.

But how came it that the carpenter paid just a dollar, that and no more, for the hammer? Did he or the hardware man go into any calculation of (1) the amount of human labor required, on the average, to produce the sixteenth of an ounce of gold (if that be the exact amount in a dollar?) and (2) the exact amount of labor performed by each one of this endless line of co-operators from Adam down, determining and assigning to each the precise amount of his labor which reappears in this particular article of mechanism? Of course not: the thing would be impossible. But the law of supply and demand has done it for them, and made ready the price the moment the parties are ready to make the exchange.

149. *Tools reappear in other articles.*

Now let us take a *forward* glance.

The carpenter uses the hammer. With every blow it wears out and approaches the day of its final consumption and return to the condition in which the intrinsic value it had received from all this labor is gone; and it remains a mere piece of iron consigned to rust, and the handle is used, perhaps, to kindle a fire with. Some part of the hammer, therefore, may be considered as going into every article the carpenter makes and uses the hammer in making; and he charges for every article and every day's work a little more for the use and wear of his hammer. And the purchaser of his wares pays back to him what he paid for the hammer—the wages of all the line of laborers whose work went into that hammer—and a little more, to pay for that share of his labor which also went into the articles, each one according to its proportion.

And the hammer goes into every article he makes in using it, in infinitesimally small quantities indeed, but it goes into them, and they as tools go into other articles in like manner, increasing in number in a geometrical ratio, carrying with them a constantly diminished and diminishing portion of the hammer, until it becomes distributed into portions inconceivably small and incalculable in number, ever

increasing in number and subdividing in amount, to the end of time, and the consummation of all things. Not a second's work, not an action of muscles in productive labor, is ever lost, or can be lost, any more than a particle of matter can be either created or destroyed by the urgency of human needs or the dexterity of human manipulations.

150. *The basis of exchange.*

Now, primarily, the labor that has gone into any article, is the basis or condition of its exchange. It created the exchangeable value, and determines its amount. Or, to be more exact, the average amount of labor needed to reproduce the article, is the average of the price at which it will be sold.

Mill, (B. I, Ch. II, § I,) after tracing this subdivision of labor, and remarking that the ultimate parts are exceedingly, incalculably small, adds, "such quantities are not worth taking into account for any practical purpose." But we may not treat them as nothing. They make up the exchangeable value, small as they are, and we might as well deny that the sun is the source of light and heat, because we can not compute the light of a single beam, or the heat of a single ray which it is constantly emitting, and by which the earth is made habitable—the glad abode of man.

Hence on his theory "value," which is but another name for "price," is but the measure of the difficulty of obtaining anything arising from the limitation of its quantity. This may be true enough in a certain sense, but it is *non causa pro causa*, not the truth which the case requires, even if it be a truth at all. Why is the quantity limited? possibly and undoubtedly by nature in some cases; but for the most part because no more labor has been expended in producing it. And what constitutes the difficulty of getting it? It can be only the work that has been performed, or rather that which is needed to reproduce it.

151. *Elements of labor represented in every article.*

It will be the most economical, and (if we exercise proper care) it will lead to no practical evils, to speak of the labor with which an article has been produced as the only item that is at all worth consideration. This labor may, without going too minutely into detail, be referred to three heads:

(1) The labor of the agriculturist and the miner in producing the raw material.

(2) The labor which each of the manufacturers and traders in various ways bestows on the article while in his hands.

(3) The distributive share of labor expended in

producing the tools and machinery, which were used in the work done on the commodity, and the food, clothing, etc., consumed by the laborers while producing it.

152. *Bases of estimates between the buyer and the seller.*

Each party to a contract estimates the commodities indeed by the labor they have cost. But then each party has a different standard by which to estimate this cost. Each party estimates what he has to sell by what it has cost him in skilled labor, and what he has to buy at what it would cost him in unskilled labor to produce it.

153. *The gain by the exchange.*

Thus, suppose it takes, on the whole, four days to make a hat and four to make a pair of shoes; that is, it takes the *expert* artizan that amount of time to produce them. But it will take the *inexpert* man more time, and the article will be inferior at that.

Now suppose it takes the latter four days to make the hat and eight days to make the shoes—in all twelve days to make for himself a hat and a pair of shoes. In like manner it would take the shoemaker four days to make for himself a pair of shoes,

and eight days to make his hat; and thus it would require twenty-four days' work to supply both parties with hats and shoes without exchange, whereas with exchange it will cost but eight days each, or sixteen in all. And supposing the artisans keep at work all the time, there is a gain to the wealth of the community of the product of eight days' labor, or a hat and a pair of shoes for the laborers in some other form of industry, in consequence of this division of labor and the exchange which is thereby rendered possible.

In the case supposed, the hatter and the shoemaker will exchange even. But suppose one of them, the hatter, invents a means or process, by which he can produce a hat in two days, with no larger outlay for stock or tools, etc. He could now afford to give two hats for a pair of shoes; but it is not likely that he would reduce his price quite so much as that. He will rather increase his profits, by asking a little more than half the former price. Now, suppose the shoemaker, should find means or processes for making shoes, whereby he could make a pair in two days, and the hats and shoes would exchange one for another, as before. And so on, as long as the human labor of production is the same, the exchangeable value will be the same.

154. *The money-price of but little account.*

So far as anything we have before us now is concerned, it is manifestly of *no consequence what we call the price of a hat or of the shoes*, whether a shilling, a dollar, a pound, or a thousand dollars, whether an ounce or a half ton of gold, coined or uncoined. Gold and silver are no standard of value: labor is the only standard, the only thing we pay for, the only thing that we buy or sell in our business transactions.

As this is an important fact, let us, in order to make it plainer, make another supposition. Suppose the shoemaker asks a thousand dollars for his shoes; the hatter, not having the money, goes to the bank and borrows it, pays it to the shoemaker, and the shoemaker on the next day goes to the hatter, and pays the same amount, the same identical bills, perhaps, to the hatter for the hat, and the hatter takes the money back to the bank, and pays the debt he contracted when he borrowed it, and all things return to *statu quo*.

155. *In what respects it is important.*

I want the limitation above indicated, however, to be carefully noted; for it does make a difference what is the price of commodities, in two very important particulars.

(1) The money used in making the exchange is never without cost. It costs something for the use of it, and interest is always in proportion to the amount, as six, or some other per cent.

(2) If coin is used, there is always some loss by wear, etc., which is also always in proportion to the amount used. It has been computed that the wear and loss of gold and silver would be about one per cent. per year of the entire amount used, if all our exchanges were made in coin, instead of using paper.

Each of these items will come up for special consideration under a subsequent head. But they are so small, that for present purposes, we may as well leave them out of the account. It will simplify our discussions very much to do so, and will make no difference with the results.

We then assume, for the present, that the price of articles, that is, the money notation of their value, is of no importance to the fundamental laws of exchange.

156. *The benefits of exchange.*

The benefits of exchange then, are referable to two heads.

(1) When there is a difference in soil, climate, mineral resources, etc., etc., or, (2) a saving of labor

when compared with the production at the place of consumption. Thus, it is cheaper to bring coffee from Brazil, Porto Rico, etc., than to build hothouses and raise it here. We have considered this already.

(2) But in the *same locality*, where the transportation is nothing, or only a minimum, we gain by it all the difference between the productiveness of skilled and unskilled labor, involving, as this does, the advantages of the division of labor, the utilization of the forces of nature, etc., already considered.

157. *The cost of exchange.*

But exchange, at any rate and in any form, involves some cost by the very act of making it. This we may resolve into two elements.

(1) The mere labor and expense of the trader, which consists again of two elements; (*a*) his capital, as store, etc., which will inevitably obey the laws of rent already laid down, and (*b*) his labor, which under the laws already laid down, will also reduce to the average rate of wages for all kinds of labor.

(2) The cost of transportation which will arise in all cases where there is a distance between the producer and consumer.

This might be reduced to the two elements above

named, namely: cost of means of transportation, as teams, railroads, ships, etc., and the labor needed in using them. But that is not necessary for our present purpose, I wish rather to find out where this cost of transportation must fall.

158. *Who bears the cost?*

If we ask the consumers, who live mostly in villages and cities, they will answer, that of course the consumer pays the cost of transportation, and will refer you to the indisputable facts, that meat, and flour, and vegetables, are cheaper in the country than in the town, in the small town than in the large city; that coal, and fuel of all kinds, are cheaper at the mines than when delivered at their doors. Hence they infer that the consumer pays all the cost of transportation.

But many Political Economists hold, nevertheless, that it is the producer who pays the cost of transportation: this is especially true of Carey, and the American writers who follow him. And they refer to the equally indisputable fact, that any commodity, as flour, for example, has a fixed price or value in the city, and that at varying distances from the city the price is less, just in proportion to the cost of transportation. Thus, note the price of flour at New York, at Albany, at Buffalo, at Chicago, etc.,

and you will find the difference in price between New York and Albany, between New York and Buffalo, as much more as the cost of transportation from Buffalo to Albany; and so on, to the remotest point from which any flour is brought to New York.

But in fact neither of these parties are altogether and wholly in the right.

In order to get at the exact truth, we must consider a few preliminary matters.

159. *Cost varies with bulk and weight.*

The cost of the transportation of articles varies with (1) their bulk or (2) their weight—very seldom with their value.

Hence for any article there is a limit beyond which it will not bear transportation; that is, the cost of transportation will equal the difference between the exchangeable value where it is produced and the intrinsic value where it is sold. But for convenience let us speak of exchangeable value alone, as it will save words and danger of confusion to do so, and because, moreover, the exchangeable value will *ordinarily* be the limit determining the price at the place of sale, as well as at the place of purchase. It will also be the element that will be taken into account in deciding upon the transportation to any distant market.

Now the distance to which anything can be carried will always be a product of the value into the reciprocal of the weight or bulk, as the case may be. Thus if one hundred dollars worth of hay weigh five tons, it can be carried a certain distance without exceeding the limits spoken of. But if it should weigh ten tons, it could be carried only half as far, and if two and a half tons, twice as far.

160. Commercial centres determining prices.

Hence for all commodities there are commercial centres. And these centres may be either (1) centres of consumption or (2) centres of trade.

Suppose in a certain island there is a city to which all the wheat raised in the island, besides what is used by the producers themselves—scattered as they are on their several farms—is carried and used up in feeding the people; this city would be, for that island and that article, the commercial centre of consumption.

Or again, suppose no wheat were used in the city at all, and yet all that the inhabitants have to spare were taken there and sold to merchants to be shipped to some foreign country, or resold to be consumed by other persons in the same island; that city would be none the less the commercial centre for that commodity, than if the wheat were all ground up and eaten in the city itself.

I have spoken of an isolated island in order to simplify the illustration. And this earth itself is such an isolated place for all articles that will bear universal transportation. Such articles can have but one commercial centre.

But as I have said, many articles will not bear so much transportation; the cost of transportation would be more than the market price when they arrive in market. Hence heavy and bulky articles must have a commercial centre near home, and by consequence, each one of them must have more than one such centre. And we must remember that by far the largest share of the articles that make up the annual product of labor on this earth, are of this kind.

Suppose, then, an article in any existing state of the facilities for transportation, will bear transportation only twenty miles. It must either have a common centre within that distance, or it will not be produced for sale at all, the producer raising only what he wants for his own use. And that centre will be a place where all the producers of that article, living within the circuit of the territorial distances just named, will compete in underbidding each other; and this competition will determine the price for that centre. And, consequently all such articles, by the necessity of having many centres, may have as many prices in the different centres.

Now, it seems to me, that for all the purposes of our computations in Political Economy, we must regard, as the price of every article, that which it bears in the *commercial centre of the world*, if it be an article that will bear transportation from any part of the world where it can be produced, to that centre.

But in case of articles that will not bear this transportation, there must be more than one centre, and, of course, more than one price; and these prices may be widely different in the different centres. And this difference in price, will be a very different thing from the different prices which an article, that will bear universal transportation, like gold, for example, will have at different times, in precisely the same places, and is determined by a different law.

161. *How determined at the centres.*

Let us now try and determine, if we can, what will be the price of the commodity in each of the two classes of cases.

Suppose, first, gold, silver, etc., including all the articles that will bear transportation to any part of the earth where they may be wanted. We have already seen what are the laws and conditions that will determine the price. It can never exceed the intrinsic value. Its average cannot exceed the ex-

changeable value, which will be, as we have seen, the average cost of reproduction. But competition, not only among the producers of those articles, but also competition among the producers of all the articles having exchangeable value, or a market price at all, as we have seen, will keep the average price down to the exchangeable value, so that the producers of that article will make by their labors the average rate of wages among mankind.

But suppose, in the next place, we have an article that will not bear universal transportation. Any place where it is wanted, either for consumption or sale, will be for it a centre.

At first the price will be determined by the amount of the demand, and the competition among those in the immediate neighborhood, who will take the commodity there for sale. If the price be too low, that is, below the exchangeable value determined as before described, the supply will decrease and the price will rise.

But if the place be a growing one, or if for any reason the demand increases, or the original supply was insufficient, either the original producers will increase their productions by increasing the labor and capital invested, (withdrawing them from others), or producers from a greater distance will bring their commodities to the new market, and the price will then be determined by competition among

the producers. *All* the producers will bring their commodities to that market, acting under the law of supply and demand, just as if it were the only commercial centre, for that commodity, that is to be found anywhere in the world.

162. Effect of the rising of new centres.

If now a new centre should spring up within an old circuit or near it, or if a railroad or other means of cheapening transportation should be made between any two old centres for the same article, we should have competition between the two, with a corresponding effect on prices.

The price is fixed then, as we have seen, by competition and the law of supply and demand. It makes no difference to the city purchaser where the article was produced; its quality is the only thing that he cares for. The man that brings it in from a distance of twenty miles will get no more for his commodity than the man who has brought it but one. And at twenty miles distant the price is always less than at the commercial centre, by precisely the cost of transportation to that centre.

Hence prices varying with the distance of producers from the city had better be regarded as the true and real prices, and the cost of transportation to that centre will be regarded as falling upon the

producer, although the consumer pays more for the article for being at a distance from the place of production.

163. Limitation to the law.

To this law there can be only one limit.

In cases of a limitation of the production of the supply to one place, that one place becomes for that article the commercial centre, and we may have either:

(1) A monopoly, in which case the owner can ask anything he pleases as the price of the article up to its intrinsic value, (he cannot sell at prices above that), and determine the price for the whole world.

(2) Or in case there be no monopoly, the price is determined by the average cost of reproduction at that place; thus, if diamonds were found only in India, their price would be the average labor cost of finding them there, and the price would be determined at the place of production, rather than at that of consumption, or at any commercial centre.

Two things are manifest with the exceptions just stated.

(1) The consumption among the producers would determine the price of the commodities in the commercial centres.

(2) The article would command a higher price at the centre than at any other place within the circuit of production limited by the distance for which it would bear transportation.

164. Cost distributed between the producer and the consumer.

Accepting, now, the price of the article in the market as the real price, we have the result, namely : *the producers* pay the cost of transportation *to* the commercial centre.

And for the *consumer*, he pays the cost of transportation *from* the commercial centre to the place of consumption. The man who produces lead in Missouri, sells it at the current price in New York less the cost of transportation. The man in New Jersey who buys the lead to work up, buys it in New York at the market price there, also, and pays for carrying it to his place of manufacture, and the cost will of course vary with the distance and facilities of transportation.

165. The only way of escaping this result.

And the only way in which this can be escaped, is the manufacturer's meeting it on the way, and having it carried from the producer in Missouri, for

example, directly to his shop in New Jersey, without going into New York, and out of it again, back to the place of consumption.

156. *What is sold determines the price of all that is produced.*

If now a producer lives at some distance from market, the cost of transportation may be quite an amount, and if there are others for whom it is less, who can furnish enough to supply the demand in that market, he will have to cease producing that commodity since its production will not pay for his labor.

And it is worth noting, that it is always the portion that is sold, that determines the price of the whole product, in the place where it is produced.

If wheat will sell at Chicago for one dollar per bushel, and the cost of transportation to that city from some place in the interior—Chicago being the nearest commercial centre—be seventy-five cents on every bushel that is carried thither, twenty-five cents will be the price of every bushel that is raised at the place where it is raised, no matter how much there may be of it, or how little.

167. *It determines also the price of all other articles.*

Nor is this all. Not only does the portion of wheat carried to the market and sold there, determine the price of all the wheat that is raised in the place from which it is carried, but it *determines also the price of all other commodities, and of labor itself.*

For, suppose wheat is worth one dollar per bushel in Chicago, and but twenty-five cents per bushel at some place in the interior, from which to Chicago the cartage is worth seventy-five cents per bushel; then twenty-five cents per bushel is the price of wheat there. If, now, other articles could be raised and sold at prices such as to enable the producer to make a larger rate of profit, than he could by raising wheat *at that price*, he would raise no wheat, but only the other and more profitable articles. But our supposition implies that he continues to raise wheat. If so, other articles must sell so low, that the raising of them is no more remunerative, than the raising of wheat. And if that be the case, then labor itself can command only very low wages; wages as much below what they are in Chicago, as wheat is cheaper in its money price, in the one place, than it is in the other.

But of course if a new centre—a new market—

arises, and more especially if it be a manufacturing village, there is a new demand. Prices will rise, to nearly, perhaps quite to the rates they bear in the old and larger centres; and of course all the producers in that neighborhood will be benefited by a rise in the price of the articles of their production, by the saving in distance and expense of transportation thereby produced.

We have now seen how trade and exchange adds to the wealth of a community and we have considered both the reasons for it and the limits within which it is, or can be, of any advantage to that community.

168. *A common mistake with regard to the benefits of trade.*

There is, however, a very common mistake in regard to the function of trade or commerce, in increasing the wealth of the world. It has been very natural, in a country or community where trade is the principal occupation, to regard the profits, and *the rate of profits of the traders*, as the chief indication, if not the chief source, of wealth. But the statements already made are a sufficient refutation of this error.

Another error kindred to it, is the doctrine that it is the amount of capital engaged in making the

exchanges that determines the amount of exchanges that will be made.

In favor of this view, is the obvious fact, that trade produces about the same rate of profit on the capital invested, whether that capital be much or little, or, if anything, more when the capital is large. At all events, the *amount* of profits is larger, if not the rate, with much than with little capital. And hence the easy inference, that the more trade and the more capital invested in trade, the better.

But there are two mistakes in this theory, either of which would be fatal.

(1) In the first place, it is not the amount of capital that determines the amount of exchange. It is rather the productiveness of labor. There can be no exchange where there is nothing produced to be exchanged. And men produce, and merchants buy, only what they can sell, and make a profit by so doing.

169. Thrift determines the amount of exchanges.

But they can sell only on condition that there are people enough to be consumers who are able to buy and pay for what is for sale; and they will be able to do this just to the extent that *their own* labor is productive, or what is the same thing, the rate of wages is high; the poor, poverty-stricken millions

of Ireland, and Turkey, for example, do not give occasion to so much trade as the same number of thousands do in some of the more thrifty parts of New England, or of New York State.

(2) The second error arises from not considering the fact already stated that, as in manufactures, so in trade there is a limit, in any given state of agricultural production, to the extent to which any benefit can be derived from those operations. When a commodity has reached its highest intrinsic value, manufacture can go no further. So when the cost of transportation is more than the difference between the cost of production in two places, exchange, implying as it does transportation, can be of no benefit to the *community*, but rather a loss, how much soever the merchant may make by it.

Now the less capital that can be made sufficient for the accomplishment of this amount of trade, the better for the community.

Hence it is manifest that anything that can diminish the cost of transportation, will be just so much added to the distributive wealth of the community. And this, as already said, can be done in either of three ways.

(1) Bringing the producer and consumer as near together as possible.

(2) By building railroads, etc., by which we utilize, as far as may be, the forces of nature in making the transportation for us.

And of the two, manifestly the former is the best, so far as it can be effected, since it saves all that is expended in making the roads, equipping and furnishing them to be added to the distributive wealth. Many of the difficulties of exchange, however, cannot be overcome in this way. Railroads, ships, etc., will always remain a necessity.

Of course, not every article in every place will have the same commercial centre. London, as we have seen, is the commercial centre of gold and silver for the world, and they have no other. So also for cotton goods. New York is the commercial centre for wheat on this continent, when it is so low abroad, or so high here, as not to bear transportation to the European markets. But besides this, many articles, as garden vegetables, etc., each have their centres all over the country. And in fact every village of a few hundred inhabitants becomes a commercial centre for some of the articles that are produced in the immediate vicinity.

Dr. Elder (*Questions of the Day*, p. 183) remarks: "One more carpenter, blacksmith, shoemaker or other artizan in every township of the United States would give a larger, surer, and better market to its farmers than all the foreign world ever did or ever will afford." But I can see no gain from an increase in the number of these manufacturers, if the manufacturing of these kinds was already done sufficiently

for all the wants of the people in the neighborhoods, whether the increase come from either of the two possible sources, (1) immigrant laborers, thus increasing the population, or (2) the conversion of agriculturists into mechanics.

But if the increase were from the coming into the neighborhood of persons who would add a new branch to its industry, and produce the things which we now import from foreign countries or bring from a distance, the villages that would thus spring up would be new commercial centres and markets, to work up the raw material and eat up the food where both raw material and food are produced; then there would be a saving to the farmers, and through them to the wealth of the world, to the amount of a large share of the cost of transportation, which is now, to so large an extent, the reason of the comparatively low price of all agricultural products, and the high price of all manufactured articles, in all places that are far remote from the commercial centres that furnish a market for what they produce.

170. Benefits of proximate exchanges.

I believe I have thus enumerated all the elements that enter into the difference between proximate and remote exchange—they are these:

- (1) The cost of transportation.

(2) The fact, that with but short distances between the producer and the consumer, any of the most remunerative articles can be produced, which, however, will not bear long transportation, and their production becomes impracticable when the people are scattered thinly over a large territory.

(3) I will add one more. The manure which is needed to keep the land from getting worn out, is produced at the place of consumption.

In any village it is produced in abundance, and sold by tons, to be carried back to the farm and garden. But the commodity is so bulky, in proportion to its value, that it cannot be carried far.

If, therefore, the consumer and producer are far apart, the land of the producer must ultimately become impoverished—his machinery of reproduction is worn out.


The value of this element may be shown by the fact that in 1850, the annual value of the manure applied to the soil in Great Britain, was \$516,845,698, a sum far exceeding all its foreign trade.

Of course this must have been mostly lost if, like some of our southern and western States, the English had confined themselves to the raising of the raw material only, and exported it for manufacture and consumption elsewhere.

171. Articles should be manufactured at the place of production.

It is a very important deduction from the foregoing discussion, that all commodities should be carried to the *highest practicable* form of intrinsic value *before* transportation; that is, they should be finished as nearly as may be, and so put in their form for final consumption, as near to the place of production as possible, before transportation. Since in this case, the cost of transportation is a less per cent. of their value at the place of consumption, and the price will be lower by just that amount.

Thus it costs about ten per cent. of its value, to carry a bale of cotton from Tennessee to Lowell, or Manchester. It does not cost a tenth of one per cent. of its value to bring it back as manufactured muslins, etc. Hence, if it must be carried at all, (and it must be carried, since the cotton will not grow either in England or New England) it would be vastly better, for both the aggregate and the distributive wealth of the world, to manufacture it in Tennessee, and transport it both ways after its manufacture, rather than carry it in the form of raw material in either direction.



172. *Difference in facility for manufacture and production.*

It has sometimes been claimed that one nation may have special facilities for one kind of industry not possessed by others, that should be a controlling consideration.

If the "special facilities" are intended to include cheapness of labor, I will postpone the consideration of that element for a moment.

It is admitted that for the production of *agricultural* and *mineral* commodities, there are facilities of climate and location that are controlling, because they cannot be overcome. Tropical fruits must be raised in the tropics, and minerals must be dug out of the earth where the Creator has placed them.

And we may as well admit, in regard to manufactures of the higher grade,

(1) That the warmer and more tropical parts of the earth's surface are not so well adapted to them as the temperate zones, while these zones are better adapted to the production of the greater agricultural staples.

(2) That the hilly and less productive portions of the temperate zones, where water-power and fuel are usually abundant, are better fitted for manufactures than those portions that are better adapted to the production of the raw material, so that in all

probability, the greater proportion of the manufacturing of those articles, whose manufacture requires the most labor and the most machine force, will always be done in the less productive districts of the temperate zone. And every dollar that is *wisely* expended in building railroads, or improving the facilities for ship transportation, is giving to these elements, or "natural facilities," increased power by reduction of the cost of transportation.

Nor is this all; there is many a region in which there is good water-power, healthy and invigorating climate, favorable to manufactures—particularly so—which are, nevertheless, so unfavorable to agriculture, from poverty of the soil, etc., as to afford an advantage for manufactures that will overcome a large amount of cost of transportation.

173. *The great wealth of commercial centres.*

Now as we have the two results,

(1) The producer bears the expense of transportation *to* the commercial centre.

(2) The consumer bears it *from* the centre to the places of consumption.

We have the following deduction: producers living far from such centres, will, as a general thing, be correspondingly and in the average, poorer, for—

(1) As producers, they pay more cost of trans-

portation on what they produce, than those who live nearer to the centre; and

(2) As consumers, they pay more cost of transportation on what they have occasion to buy.

Hence in general, in all places remote from commercial centres, agricultural products—the products of the labor done there—are cheaper, while manufactured articles—the product of labor *not done there*—are high, since the people have the double transportation to pay, or rather, *because* the amount they have to pay, under both these heads, is greater, the farther from the market.

The only counteracting influence to this rule, arises from the fact, that as we approach such a centre, land rises in value, and rents become higher. This goes far towards equalizing the condition of the inhabitants in reference to the acquisition of wealth, for all those who occupy lands that are used for agricultural purposes, since their rent is always in proportion to their productive value, the cost of transportation being taken into account.

But always, as we approach any commercial centre, there is a point at which the *intrinsic value* of land is greater for *building purposes* than for agricultural, and then it passes under the influence of another law, any increase of rent for such purposes, becomes an addition to the cost of living in another way; this cost must be added by the mer-

chant to the price of what he sells. In the same way, it must be added by every manufacturer to the articles he produces, while living within the influence of this law.

Hence in large cities we have a counteracting influence which brings the cost of the amount of the necessities of life, required to support an individual, so high, that what is left to the laborer after paying for them, is not more than the wages of one who lives more remote from the commercial centre.

174. Inference in favor of free labor and free trade.

I have thus far considered exchange on the most broad and general principles. Our investigations in the preceding chapters in regard to production, have taught us that for the maximum of distributive wealth, we must have a dense population, that we may have,

- (1) The greatest diversification of labor.
- (2) The minimum of expense in exchanges.

These must also be in order, that competition and the law of supply and demand may have their proper influence,

- (1) *Free labor*,—that is, each man must be left to do that which he prefers, that which he can do to the best advantage, and with the best satisfaction to

himself. In this way he will contribute the largest amount to the wealth of the community in which he lives.

(2) *Free trade*,—that is, the unrestrained freedom of each man to buy of whom he pleases, and on what terms he pleases, provided, of course, that the other parties are willing.

Free Labor and *Free Trade*,—these are two prime conditions of the greatest increase of wealth and the best promotion of human happiness and welfare, in so far as they are dependent on the existence and distribution of wealth. Hence the famous maxim in regard to these things, "*Laissez faire*," or, in the more pungent maxim of Lord Falkland, "Where there is no necessity for legislation, there is a necessity for no legislation."

All legislation and interference with human liberty is an evil, and can be justified only on the ground that it is the least of the two or more evils from which a choice must be made.

175. *Governments not satisfied with this.*

But governments have not been at all careful to observe these wise precautions. In no nation on the face of the earth, except our own, is labor free in the sense here intended. For the existence of an oligarchy or an aristocracy with hereditary

political powers is necessarily and inevitably an interference with the freedom of a portion of the community, and that portion will of course be the laborers, who are despoiled of political rights. The laws will be made, as in England they have for centuries avowedly been made, in the interests of capital.

Nor have governments been quite willing to leave their citizens and subjects to free trade. These restrictions on trade may be either domestic or foreign; restrictions upon the trade of one citizen with another, or upon the trade of citizens with foreigners.

Of these restrictions I will mention three, two domestic and one foreign.

176. I. *Monopolies, copy and patent rights.*

I. And first, *monopolies*. A monopoly is the power of one man or a class of men, constituting what is virtually a close corporation, to control the production and sale of some one article or class of articles.

A monopoly therefore precludes competition, which is the only means of bringing the prices of all things to the level of justice and equality. For, as a general law, *wherever there can be combination there will be no competition.*

The form of monopolies, that has thus far been able to maintain its place, is found in the case of patent rights, and copy rights.

Thus far, no other practicable measures have been devised for rewarding the inventor or discoverer. The product of his labor is—when first introduced—new. It has no market value fixed, and we have no way of estimating its value as a means of increased efficiency to labor, or of promoting the welfare of mankind.

Hence, there seems to be no way but to let the inventor try it, offer it for sale on his own terms, protect him from competition for a short time, and then end his monopoly by the expiration of his right.

177. II. *Usury laws.*

II. Most governments have found, and still find it necessary, in order to protect a certain class in the freedom of their labor, to fix a legal rate of interest, and to regard the taking of more as a misdemeanor punishable by law.

These laws have never been found to prevent certain persons from hiring money at more than the legal rate, whenever they have found occasion to do so; violating the spirit of the law perhaps, but not transgressing its letter in such a way as to make them liable to any penalty the law might inflict.

But it is found that without some rate of interest, fixed by law, there is always a tendency, with certain kinds of persons, to take advantage of the necessities of others, and compel them to make contracts with high rates of interest, and what is still more, to take advantage of opportunities to compel their debtors either, (1) to raise the interest, or (2) to sacrifice what property they have.

The argument against usury laws that is most commonly urged, is, that money is like anything else that a man has. He should be left free to buy and sell, borrow and lend, on any terms he can agree upon, any conditions he can make with the other party—that leave the borrower and the lender free to bargain with each other as they please, and the competition under the law of supply and demand will bring the price of money, that is, the rate of interest, to its lowest figure.

• 178. *Arguments in their favor.*

But to this, the answer usually given is two-fold.

(1) Money is not in *all respects* like other commodities; of this I shall say something in the next chapter. We shall then see that in two or three most important respects it is unlike any other commodity.

(2) In the second place, it is claimed, that in

every case where the matter has been tried, the abolition of all usury laws, leaving the borrower and lender entirely unrestrained, the effect has been to raise the average rate of interest.

This, however, is rather a question of statesmanship than of Political Economy; and it would lead me too far from my plan to discuss it here. I may add, however, that I believe the proposition is well sustained, and furnishes therefore another fact to be accounted for by the Political Economist.

It cannot be said, that the only thing we are to infer from the fact that the rate of interest rises whenever the usury laws are abolished, is, that it was too low before. I think it can be shown everywhere, that whenever a rate of interest is fixed by law, money can ordinarily be hired on good security at rates below the legal rate. Now, under the operation of laws that have been discussed in the last chapter, if the legal rate were too low, nobody would be a lender. Wishing to make money as fast as possible, he would invest his funds in something else, rather than lend it on mere simple interest. If the legal rate were not as high as is necessary to enable the lender to make the average rate of profit by lending his money, it would certainly be raised by an act of the law-making power.

It is claimed, nevertheless, that we should leave people in this, as in all other respects, to put their

own estimate on what they buy, and pay for it whatever they can afford, and in accordance with their own estimate of its intrinsic value to them ; let them buy it as they please, and at any price they may choose to give for it.

This might be well if only they were *buying* money ; but they are *borrowing* rather than buying. And if a man already involved and embarrassed tries to borrow, to help him out of his difficulty or save his reputation, and gives as security a lien upon what he has, he is really defrauding the old creditors in favor of the new one he makes by borrowing. If he really succeeds by this means and saves himself so as to pay all of his old liabilities, it is well, and nobody is the worse for his transaction, perhaps. But if he fails, as men who are driven to the necessity of borrowing at rates of interest above that established by law are pretty sure to do, then of course there will be only the less left for those whom he was owing when he effected the loan at such high rates ; in consequence of the loan he had made they are losers by the operation.

179. III. *Tariff, for revenue.*

III. TARIFF. A tariff is a tax imposed on articles that are brought into a country, across the national boundary, for sale and consumption.

It is first to be considered as a means of **revenue**, and then, in regard to protection.

A tariff, for whatever purpose imposed, is an **obstacle** to freedom of trade between the **citizens and subjects** of different nations.

Its only recommendation as a means of **revenue**, is the convenience of collecting it, and collecting it too, in amounts sufficient to answer the **purposes and wants** of government, without much complaint on the part of those who pay it.

Without a tariff for revenue, the means to **carry** on the government must be raised by a **direct tax** on the people, or a tax on articles of home production. And in either case it is likely to be paid by the people, very much in proportion to their means, and hence many of them will complain. But if raised by a tariff, they pay their taxes when they buy their goods, and are not aware how much of their purchase money goes for the tariff, and how much for the intrinsic value of what they buy.

180. Objections to it.

To this method of raising a revenue for the government—a tariff for revenue—Political Economists have been accustomed pretty uniformly, to urge two very serious objections, without, however, having ever yet succeeded in accomplishing much by their objections, namely :

(1) It encourages extravagance in the governmental expenditures; the money comes indirectly from the people, and in such a way that no one really knows how much he pays, and consequently nobody feels it as he would if he paid it directly. Hence, the people are not apt to watch the appropriations and expenditures of the government, so closely as they otherwise would.

(2) The burden usually falls very unequally upon the people. When the revenue is raised by tariff, no man pays according to his property, or his income, but only and solely in proportion to the amount he consumes of the article that is taxed. Hence, it often happens that a poor man, by consuming more of the article that is taxed, pays more of the taxes that go to support the general government, than the rich man. In fact, this inequality is almost if not quite an inevitable result, of a tariff for revenue.

But it soon occurs to the statesman, that the tariff which the wants of the government make a necessity, may as well be so arranged as to favor domestic industry, and promote the welfare of the people who are thus taxed.

181. Effect of tariff on importations.

Mr. Carey, (*Harmony of Interest*, 1856,) en-

deavors to show that a tariff for revenue has never produced enough for revenue, in any one instance when it has been tried. He also claims to have shown that more goods are actually imported under a high tariff, if it only be so adjusted as to be protective, than under any tariff that fails of protection, however low. He draws from this, however, not the most natural and obvious inference that would be expected, namely: that "*protection does not protect,*" but rather that it *does* protect, and that, too, so effectually that under its influence the people of a nation can buy, notwithstanding the higher prices which it occasions, more than they could without it. People can buy only what they can pay for, and what they can pay for depends upon the amount and the productiveness of their own labor; or what is the same thing, the amount of work they can get to do, and the amount of wages they can get for doing it.

And this, it seems to me, is a sound and satisfactory inference. Under protection, domestic industry is so much more thriving and prosperous that the surplus, beyond domestic consumption, is so much greater than under a low tariff, as to create the greater demand for foreign productions. He depends upon two propositions for this inference.

(1) Whatever is produced will be sold in exchange for other commodities, excepting, of course,

what is needed by the producers themselves for their own immediate consumption.

(2) The amount which we import from foreign countries, after correcting for variations in the balance of trade, is an indication of the thrift and productiveness of labor at home.

There can be no doubt that the greater the amount of the products of labor in any one year, year by year, the greater will be the amount of domestic exchanges; that is, the greater will be the amount of purchases and sales of the people themselves, one with another. And so long as there are objects of foreign production which the people want, the greater the amount they may have left after purchasing the articles of domestic production which they must have, so much the greater will be the amount of those foreign products that will be in demand, to act as stimulus to the enterprise of the importers.

But an increase of imports, so long as there is an increasing balance of trade against us equal to the increase of imports, is no indication of thrift at home. With this caution, it seems to me that Mr. Carey's facts, and his inferences from them, are well made out and eminently worthy the attention of the statesmen and legislators of our country.

182. *What makes a tariff protective.*

A tariff, to be protective to any particular form of industry, must, of course, always be equal to the difference between the rate, at which the commodity can be produced in the country of its production, and that at which it can be produced in the country of its consumption. Thus, if cotton cloth can be produced in England, and sold, after cost of transportation here, for ten cents per yard, and it cannot be produced here for less than twelve, two cents per yard would be a protective tariff, and anything below that could not operate as protection; above that, it would be, virtually, prohibition.

183. *Effect of a tariff that is below protection.*

A tariff that falls below the point at which it is protective, cannot fail to increase the price of the article to the consumer; for it would raise the price of the article by the amount of the tariff, *without creating any competition* among domestic producers, so as to reduce the price, by means of their competition, one with another.

Or again, a tariff upon articles, that for any reason a nation cannot produce, as for example, cotton in England, would only enhance the price to the extent of the tariff, and for the same reason, as a

"revenue tariff," as it is sometimes called, would raise prices there permanently. There are, or can be no domestic producers to reduce it by competition, (1) among themselves, or (2) with the foreign producers.

A tariff then, upon articles which we cannot produce, or a tariff that fails to be protective upon what we can produce, but does not, only increases the price of the article to the consumer.

And even a tariff for protection, if it be needed at all for that purpose, will raise the price of the imported article for the time being. But if it be an article which the laborers of that country can produce to advantage, the tariff will have the effect of creating an increased demand for labor, and thus, by raising the price of labor in all branches of industry, it will enable the people of the country generally to buy the article more easily than before, even at the advanced price.

184. Limits within which protection is possible.

And here, I think, we have a hint at the limits within which protection by way of tariff can be good statesmanship for any country. Protection for its own sake, and with a mere vague notion of doing good somehow, is but an idle fancy of a not very clear brain.

A protective tariff on what cannot be produced is almost a contradiction in terms. But a tariff with a view to protect what can be produced only at great disadvantage, will be an unnecessary tax upon the industry of the surrounding country; for the reason that it takes so much more labor to produce the article in the one country than in the other.

But the test is the *amount* of labor—not the wages, or the cost of the labor.

Thus, for example, I suppose we *might* in this country construct square miles of hot-houses, and raise all the coffee we have occasion to use. But it would be a very costly process. It would require a very high tariff to protect that kind of industry. And it would be very bad policy; for although it it would diversify industry and raise the wages of the laborer, it would nevertheless be an unremunerative tax upon the industry of the country. It would be, to a large extent, money thrown away. It would take, perhaps, ten times as much labor to build hot-houses and raise the coffee as it would to earn the money and pay for the article at the price at which it could be imported, and hence, if I am right in estimating the proportion, about nine-tenths of the labor of raising the coffee at home would be a total loss to the world; the men who were engaged in performing the work might as well have been idle nine-tenths of the time, or nine out of ten

of them idle all the time, as to have engaged in making the preparations for raising coffee under such great disadvantages of natural position.

185. *List's Doctrine.*

Mr. List, in his work on National Political Economy, has shown, as it seems to me, that there are three stages in a nation's history, in reference to the policy of protection. In the first stage, when the people are but few, capital scarce, and land plenty, protection cannot effect any good result. A tariff merely taxes the people to no purpose. But, as soon as the people become more numerous, and capital has begun to accumulate, they will need to diversify their industry, by the introduction of manufactures, and for this, most likely, some well adjusted scheme of protective duties will be necessary. This constitutes the second stage. The third occurs, when the nation has become so rich, so densely populated, that there remains no new form of industry to be domesticated, and no fear of evil from competition with other nations. In this stage, a protective tariff will be a mere dead letter. There will be but little importation of what the nation can produce, and there can be no importation that will lower the price of commodities, whether we regard those imported, or those of domestic production. In the

first stage, therefore, protection is unavailing, and a damage. In the second, it is effective and beneficial. But in the third, it is unavailing and useless, a mere dead letter on the statute books.

The fact, however, that a protective tariff raises the money price of the protected article at first, and for a time is only a *prima facie* objection to such a tariff, at most.

186. *Protection and national independence.*

The general reasons for protection may be arranged under three heads.

(1) No nation can be independent of another that does not produce all that it needs for consumption. Give any nation, however small, the exclusive power to manufacture gun-powder, and you will make that nation the mistress of the world. The same is true, though to a less extent, of every other article, that is, as is felt to be a necessity of life.

It is sometimes said that this would be a means of keeping nations at peace. And doubtless so it would, to some extent. It would not, however, be the peace of equality and right; but the peace rather that comes from the uncomplaining, unresisting submission of the weaker to the stronger.

187. *Diversification of industry.*

(2) The second fact is, that no community can be thrifty without a diversification of labor; and, as a general rule, the greater the diversification of labor, the greater the number of productive employments, the more nearly do we reach the condition of the greatest thrift, namely, the greatest industry of the greatest number.

Thus, if *all* the people of a country are agriculturists, agricultural labor and agricultural products will be very cheap in their money value, and all other things will be very dear in their labor value, however cheap in their money value. Hence the laborers will be able to buy but little, however much they may have to sell.

If then a nation be so situated, that a protective tariff is necessary as a means of introducing manufactures, or any new form of productive labor which it is desirable to have, there can be no doubt of the wisdom of such a measure, provided, the new form of industry is one that is so well adapted to the people and the country, that when once introduced, it can be carried on with profit, and without continued protection.

188. *Free trade reduces the wages of the laborers.*

(3) The other is the fact that free trade between

nations will sooner or later bring the price of labor—wages—to the same level the world over, and that level will be the lowest figure to which tyranny and misgovernment can reduce the laborers anywhere.

Equality in skill, machinery, and other facilities for manufacture, are so nearly within the reach of all nations, that we may consider them equal everywhere. The facilities for transportation are so great, that the cost of transportation has become an exceedingly small per cent. in the cost of all the most valuable articles we produce.

Hence with free trade we bring all the most valuable articles into competition in the one great commercial centre of the world. The producers of the raw materials, wherever they are, must bear the cost of transportation thither, and if they are consumers too, they must bear the cost of transportation of whatever they consume, back from the place of manufacture to themselves. And he who can hire labor the cheapest, can of course, other things being equal, make himself the commercial centre and drive all other competitors out of the market, and thus control the market of the world.

189. *The evil effects of low wages on the laborers.*

It is sometimes argued that this reduction in wages would be no calamity, because if wages are low,

other things will be low, and the laborer is as well off as if they were high.

But we must remember,

(1) That the value is created by the labor of manufacture at any rate, and if the laborer does not get it, the capitalist will. Hence the lower the wages the faster the capitalists get rich, and the greater the difference in point of wealth between them.

Suppose, for example, a bale of cotton worth fifty dollars is manufactured into goods that are worth five hundred dollars, four hundred and fifty dollars of wealth have been created by the labor and capital combined. Now it is perfectly obvious that the more of this the laborers get *as wages*, the less will be left to the capitalists *as profit*; for the two together will equal the total increment, which in this case is four hundred and fifty dollars.

(2) Again, the price of labor is always fixed by the competition at a commercial centre that is near by; and the same is true of all the coarser articles we have occasion to use. Hence it is undoubtedly true that they always tend to regulate themselves to each other. But the finer and more valuable articles will always bear a price that is fixed by a much more remote centre, and will therefore show little or no tendency to regulate themselves to the wages of the laborer, especially in those localities where the wages are the lowest.

But the finer and more costly articles constitute, not only the luxuries and articles of *vertu* for the rich; they constitute a large share of the conveniences, and even the necessities of life; convenient and necessary for rich and poor alike; they include tea and coffee, the drugs and medicines used in sickness, as well as the clothes needed for decency on festival and gala days, and are desired as much by the poor, who can afford such things only on rare occasions, at most, as by the rich who can have them all the time.

(3) There are some commodities which we all want, whose price is not determined by the average cost of reproduction—which is of course always to be measured by labor, and consequently by wages, and therefore varies with them—but by supply and demand. Hence the lower the rate of wages, the more completely out of the reach of the laborer are all this class of means of enjoyment and culture.

Suppose two men, one poor and the other rich, one with an income of three hundred dollars per year, and the other with one of ten thousand. Each of them has a son or daughter that he wants to educate. Books, board, tuition, etc., if of the same grade, bear the same price. Or if they both wish to travel by railroad, canal boat, or stage, to see a distant friend, or bury a deceased parent, the "fare" is the same for each, and nearly every item of cost

is the same, and by no means proportioned to the income of the purchasers. What costs the poor man one-tenth of his annual income, may cost the rich man one-thousandth part of his. And this is the case, chiefly and especially, with those things which are the means by which the poor man can rise in the world.

Or suppose again the fees of a distinguished surgeon are, for certain services, one hundred dollars. This is but one-twentieth of the income of a man who has two thousand dollars a year. It is one tenth of that of him who has but a thousand a year, and one-half of his who has but two hundred, and quite out of the reach of the poorer men in the community.

In the same way if a man wants to take a journey, to educate his children, to buy a book, or any other article of general or universal value, its cost is a definite sum, the same in amount, indeed, to all, but a greater or less proportion of his income according as his wages are high or low.

(4) The higher the wages of the laborer the faster he can accumulate capital and rise above the condition of a mere laborer, provided, of course, his wages are such that he can save anything after paying for the minimum of food and clothing that can be made to supply his wants. In fact any one who is sufficiently resolute in his determination to accu-

multate something, can and will save all of his wages that are in excess of that minimum. Suppose that minimum is twenty-five cents a day, and the wages of one man are fifty cents, and those of another seventy-five cents per day, the latter will be able to save money twice as fast as the former.

190. *Beneficial effects of the higher manufactures.*

There is another important fact bearing on the two systems, free trade and protection, which ought to be considered. It relates to the promotion of both the thrift and the intelligence of the people.

A protective tariff is neither needed or justifiable, except when it is required to diversify labor and give increased occupation to the people by introducing the higher and more costly manufactures.

This is abundantly illustrated by facts in our own country. All the finer cottons and woollens are manufactured in the eastern States, New Hampshire, Rhode Island, Massachusetts, etc. In the western States only the coarser goods are manufactured; the cost of transportation is a large per cent. of the cost of the cheaper goods, and a small per cent. of the cost of the finer ones. Hence, for the western States, the cost of transportation is an effective protective tariff against eastern competition on all the coarser goods.

But it is so small a per cent. of the cost of the finer goods, that these are not manufactured there at all. And the difference in the distributive wealth of the people of the two respective portions of the country will not be, I suppose, a matter of question with anybody.

And in another point of view, their production is essential to the highest welfare of the nation.

(1) They require and imply the highest skill and the most refinement of taste in their production. Hence their manufacture not only implies, but it also encourages and promotes, the culture of the people; they must be more intelligent and refined in order to carry on these forms of industry successfully and efficiently.

(2) Again, it is precisely these higher manufactures in all civilized countries that utilize the forces of nature to the greatest extent, and thereby making them work for us. They make our labor day for day the more efficient, and of course, therefore, and just to that extent, the more productive of value; or, what is the same in effect, the kind of labor that enriches a nation the fastest, the manufacture of the finest goods, must either be left to savage and mere semi-barbarians, where wages are the lowest—almost nothing—or carried on by the most highly civilized and the richest people, with the greatest distributive wealth, where the use of machinery has been made the most effective in saving human labor.

Let any foreign manufactured articles drive our domestic manufactures out of existence, one after another, and our people will be obliged to become agriculturists. They would then have to pay the entire cost of transportation, both of their raw material, as cotton, and of their food, as grain and meat, to the place where both are manufactured into the articles we ourselves need for the supply of our wants; the one, manufactured by the loom into cloth, the other, by digestion and assimilation, into the bones and muscles of the laborer, who spins and weaves it.

And thus, everything we might have to *sell*, would be low-priced; and everything—all our finer and better articles, would be high-priced: we should be compelled to sell cheap and buy dear.

191. Free trade only with free laborers.

If, however, we could remove *all* restrictions, educate those that are immersed in ignorance and barbarism, and obliterate all hereditary monarchies and aristocracies, making the laborers as free as trade, the law of supply and demand would undoubtedly bring all things, labor, capital, skill and stupidity, industry and idleness, extravagance and economy, profligacy and frugality, each to its proper level.

But until these conditions are fulfilled, *free* trade, with the *unfree* laborers of the old-world, must bring our laborers down to their level—it cannot raise them to ours, or labor anywhere, to its proper equality with capital.

192. *Difference between British doctrine and British practice.*

Political Economists have very generally advocated free trade. Politicians have quite often advocated a tariff for revenue, while statesmen have been found advocating protection under some one or other of its forms. Even in England, which is commonly regarded as especially devoted to free trade, free trade is not practiced any further than it suits the local national interests to practice it. That government imposes no “protective tariff” indeed. Its writers and statesmen appear to have a great horror of such a thing. But it imposes “countervailing duties” upon every object of foreign production which is likely, by its importations, to interfere seriously with any branch of industry, pursued by its own subjects, which it can protect. The English will admit tobacco, for example, free of duty: they can raise none that is good for anything. But they impose a “countervailing duty,” on cigars, snuff, and all the forms of *manufactured* tobacco, so great as

to preclude importation ; they have a large amount of pauper population who can earn a living by manufacturing the tobacco, which they cannot raise, into snuff and cigars, which, with the tobacco imported, they can make.

193. *John Stuart Mill advocates protection.*

Among the writers on Political Economy, however, we find some advocates of protection. I will quote merely John Stuart Mill, and this I do, not only because he is confessedly the ablest and the fullest English writer on the subject, but also, and chiefly, because he is commonly supposed to be, like most of the English Political Economists, an advocate of free trade. He says (Political Economy Book V, Chap., X, § I) :

“The only case in which on mere principles of Political Economy, protecting duties can be feasible, is where they are imposed temporarily (*especially in a young and rising nation*), in hopes of naturalizing a foreign industry, in itself perfectly suitable to the circumstances of the country. *The superiority of one country over another in a branch of production, often arises only from having begun it sooner.* There may be no inherent advantage on one part, or disadvantage on the other, but only a present superiority of acquired skill and experience. A country

which has this skill and experience yet to acquire, may in other respects be better adapted to the production than those which were earlier in the field ; and besides, it is a just remark of Mr. Rae, that nothing has a greater tendency to promote improvements in any branch of production than its trial, under a new set of conditions. *But it cannot be expected that individuals should at their own risk, or rather to their certain loss, introduce a new manufacture, and bear the burden of carrying it on, until the producers have been educated up to the level of those with whom the processes are original.*

A protecting duty continued for a reasonable time, will sometimes be the least inconvenient mode in which a nation can tax itself for the support of such an experiment. But the protection should be confined to cases in which there is good ground of assurance that the industry which it fosters will after a time be able to dispense with it ; nor should the domestic producers ever be allowed to expect that it will be continued to them beyond the time necessary for a fair trial of what they are capable of accomplishing.

Shortly after Mr. Mill's death there appeared in the New York *Tribune* over the well-known initials, G. W. S., the following :

"Presently he touched upon Free Trade, a subject which I rather dreaded : but I made haste to ask

him whether he still adhered to the well known statement in his Political Economy, which Protectionists were in the habit of quoting in their own defense: to the effect, namely, that Free Trade was not an absolute doctrine, but a question of circumstances. 'Certainly' was his answer, 'I have never affirmed anything to the contrary. I do not presume to say that the United States may not find protection expedient in their present state of development. I do not even say, that if I were an American I should not be a Protectionist.' He added that he believed the best of Protectionists held that doctrine as a temporary one, which they stood ready to exchange or modify, when the country should have proved itself able to compete with European manufactures."

194. *Classes of persons that are not likely to favor protection.*

There are, however, certain classes of persons, who, for one reason or other, are not likely to be persuaded into protection; they are,

(1) Salaried men who live on fixed means. Their income is fixed and does not vary with the fluctuations in price. Free trade would therefore reduce the price of many of the articles they have occasion to buy, without reducing at all the amount of their

salaries; or at least, so they think, and hence free trade is to them virtually an increase of salary, to quite a per cent.

(2) For the same reasons, rich persons, whose money is to a large extent or wholly invested in government stocks, banking, etc., where the rate of interest is regarded as independent of the price of the ordinary commodities of consumption. Free trade is for them the same in effect as an increase of interest, or the per cent. of the dividend on the stocks they own.

(3) Merchants, brokers, bankers, etc., especially in seaport towns. Their business consists in trade, and to a large extent in foreign trade, and as their profits are a per cent. on their capital, and vary with the amount of business, they will advocate the policy that produces the most business in their line, free trade.

(4) All those persons whose business is such as to allow of no *foreign* competition. Of this class, perhaps, newspaper proprietors are the best illustration. The New York *Herald*, *Times*, *Tribune*, *World*, etc., could no more be made, printed, and published in England, and brought here for sale, than coal be mined in New York, or cotton raised in London. They must be made here—written mostly, set up, worked off here, in order to be ready for distribution while they are fresh and new.

But free trade with foreign countries would reduce the cost of paper, ink, articles of most or all kinds, the cost of the labor of the office also, and that too, without any reduction in the price at which the proprietors of such papers can sell them; or possibility of rivals made in London or elsewhere, where labor and materials are cheap.

195. Political motives that may oppose it.

Perhaps to these we ought to add a fifth class, (and I fear there are such in our country); I mean all those who believe that an aristocracy of wealth or power is the best form of government, or who at least desire such an one for our country. For the effect of free trade with foreign nations, by reducing the wages of the laborer, would of course raise up a wealthy few and reduce the many to such poverty and dependence, that they would be powerless against their richer neighbors, and without hopes or possibility of rising to education, wealth, and means of influence.

Such a result might not follow in all countries, and under all circumstances. But there can be no doubt, I think, that it would follow in any country, where the wages of the laborer is higher than the average rate in those countries with which it would thus be brought into commercial relations. The law of competition will effect this.

196. *Probability of the continuance of protection in America.*

Not long since a distinguished professor of Political Economy from England, lecturing in New York, in advocating free trade, remarked that it seemed to him that protection in this country was taxing "the many in the interest of the few ; taxing all the citizens of our country to support the mines of Pennsylvania and the factories of New England. This may be so. But if it is, then free trade will surely result in the breaking down of the miners of Pennsylvania, and the manufacturers of New England, to build up the capitalists of Great Britain. Well,—blood is thicker than water, and I rather think that so long as we must have a tariff for revenue, the laborers of our country will insist that it shall be so adjusted as to protect American industry, rather than foreign capital.

CHAPTER VIII.

OF MONEY AND BANKING.

Traders between producers and consumers—Money the means of exchange—Theories of money—Gold and silver a part of the wealth of a country—What determines their value—Useful for other purposes than coin—Proof of this view—Reasons for using them for coinage—Signification of coinage—Effects of increase of gold and silver—Labor, not money, the standard of value—Importance of this view—Market value determines the coin value of silver and gold—Money and trade, how they enrich—Trade enriches individuals—Banks, (1) as places of deposit—Banks, (2) as places of exchange—Saving of labor thereby—Clearing houses—Banks, (3) for discount and loans—Banks, (4) for issue of bills—Paper currency saves loss—Less specie needed—The process of banking—The bankers' resources—Loan of the deposits—The nature of the "loans and discounts"—Loans deposited—Necessity for a specie basis—The effect of redemption—Ratio of specie to loans and discounts—Limit to a bank's "circulation"—How banks cause fluctuations in prices—Return to specie payments after suspension—Ratio of specie to circulation in this country—The effects of over-issue—How money differs from other commodities—What determines the amount of paper—Banking compared with other "business"—How determine the amount of paper needed—How determine the amount of specie—Governments

cannot control the amount—How gold and silver affect the amount—Why no more is coined—Effects of inconvertible paper—A practical test proposed—How money gets into circulation—Paper not convertible on demand—Premium on gold determined by the ratio of gold to paper.

197. *Traders between producers and consumers.*

I have thus far spoken of exchange as if conducted by the producers and consumers without the intervention of any third party, and as though it were an exchange of the simple commodities themselves. But neither of these conditions often occur. For the most part there is a class of traders intervening; and the commodities are sold and bought for some "circulating medium," as it is called, which is considered as money.

198. *Money the means of exchange.*

Of the utility of both money and a class of traders, as indirectly increasing wealth, by facilitating exchange, there can be no doubt. The man who has a crop of wheat to sell, can deliver it all at one place, and take the money for it; this he can carry with him, and use in purchasing other articles. Otherwise he would be obliged to part with a portion of his wheat to one man in exchange for what he might happen to want to purchase of him, and another portion to another, and so on.

We have shown in previous chapters, and under several different heads, how traders by diminishing the necessary labor of exchange, add indirectly to the aggregate and distributive wealth of a community.

In any civilized country some exchanges, besides those that can be made immediately between the producers and the consumers, are necessary also. And one man can make the exchanges for a large number of persons, with about the same labor, time, and capital, as for a much smaller number. But he needs some means, implements, or "tool" with which to do it; this tool, or implement, is money.

199. Theories of money.

Of money there have been several theories. David Hume, who, so far as I recollect, was the first to treat of it in a professedly scientific way, evidently regarded money as constituting the only wealth, or element of wealth in a community. But this is manifestly wrong; as every product of labor remaining over and above what is consumed in the process of producing it, is a part of the wealth of a nation, or the world at large. And that which is not money, is often more useful than money itself.

A more recent theory holds that money is no part of wealth, but is only a *representation of value*;

a certificate, in the language of Bastiat, "that the bearer has rendered to society services equivalent to the amount of the silver he holds, etc.," for which he has received no pay.

200. *Gold and silver a part of the wealth of a country.*

But manifestly gold and silver are a part of the wealth of any community, though, not as the earlier writers seem to have supposed, the whole of it; they obey the same laws, for the most part, as other commodities. In a state of nature, and before the approach of man, they have no exchangeable value; they are produced by labor, and the quantity which can be obtained per day *on the average*, determines their exchangeable value, as truly and rigorously as this law of production determines the exchangeable value of any other commodity.

201. *What determines their value.*

This results from the law of supply and demand. If a man wants silver and gold, no matter what for, he will go to digging, if by that means he can get in a given time the amount of those metals he wants, and in the form in which he wants them, by the least amount of labor. But if he can get more of

them in that form in the same time, and with the same labor, by raising wheat, cutting logs, making or laying brick, he will resort to these forms of industry and trust to the possibility of exchanging the commodities he will thus produce for the gold and silver he wants, but does not produce.

202. *Useful for other purpose than coin.*

And in this respect it makes no difference what one may happen to want the gold and silver for. They have a use for other purposes than as a circulating medium. This is an important, a controlling fact; but it is one that is often overlooked. And it is their intrinsic value for other purposes that, together with the average labor required for their reproduction, determines their market price, and the amount that shall be put into coin of any particular denomination, as a dollar, a franc, a sovereign, an eagle, etc. For suppose that an ounce of silver and a sixteenth of an ounce of gold are ordinarily worth one dollar, that is, assuming the dollar to be a constant value. If gold and silver increase in quantity more rapidly than the aggregate wealth, the supply is greater, probably because the average cost of reproduction is less, and more of them must go to make a dollar.

If they become scarcer, it is because of a change

in the labor cost of reproduction, and the dollar must weigh less, or it will be worth more.

203. *Proof of this view.*

To test this, suppose gold and silver have become more abundant, and by the law of supply and demand, cheaper than formerly; the farmer, for example, will not sell his wheat for the same amount of gold and silver, as before. He will demand more. This will be indicated, indeed, as a rise in the price of wheat. It is more properly, a decline in the price of silver and gold. Or, on the other hand, suppose that gold and silver become scarce—the coin will be sought and used in the manufacture of gold and silver ware—they will rise in price, and nobody will pay them out for ordinary commodities except at a reduced nominal price of those commodities.

In such cases, the commodities are usually said to fall in value. But it is more proper to say, that the gold and silver have risen in price.

204. *Reasons for using them for coinage.*

It is undoubtedly true, however, that gold and silver, besides being otherwise the most convenient things to serve as a means of exchange, are also more nearly uniform in their average cost of repro-

duction, as well as in intrinsic value, than any other commodity. Hence, we have in general, five peculiarities by which they seem to be better qualified than anything else, for the use of exchange.

(1) They are of more nearly uniform intrinsic value. The gold and silver of different mines are of the same quality.

(2) They condense an amount of exchangeable value within a small compass, larger than almost anything else.

(3) They are more nearly uniform in exchangeable value, than any other available commodity ; it taking about as much labor to get them from the mines in one age, as in another.

(4) They are more easily coined into convenient forms than anything else, that is valuable enough (per pound) to answer the purpose.

(5) I add a fifth. Such is their nature, that the process of coining them, or manufacturing them into money, does not, in the least, injure or impair their intrinsic value for other purposes. In most cases, on the contrary, the manufacture of a material into any one kind of article, ruins and spoils it for all others.

205. *Significance of coinage.*

Coining is generally,—always, in latter times—

done by the government. And this is in order to prevent abuses. The objects and significance of coining, may be referred to two heads; the impression stamped on each piece, is a certificate of two facts.

(1) That the piece so stamped, has a certain weight,—and thus the coining saves the necessity of weighing every time an exchange is made.

(2) That the piece is of a given purity; this is important, for, being alloyed with cheaper and baser metals, it might have the same weight as another piece, and yet be of a very inferior value.

206. Effects of the increase of gold and silver.

It would be easy to trace the history of money, and show how, in every case, (1) any increase in the aggregate wealth, *without* a corresponding increase in the quantity of the precious metals, has resulted in an increase of their price, and, (2) how any sudden increase in their quantity, as by the discovery of new mines, has resulted in their decline in price, or, which is the same thing, and a more adequate expression of it,—there has been a rise in the price of all other things.

207. Labor, not money, the standard of value.

Money itself, then, being the product of labor,

obeys the law already laid down. An ounce of silver, if that be the quantity we call a dollar, is the product of the labor expended in mining, coining, etc., that piece of silver, and must depend for its value, upon the average cost (labor) of reproduction. If a new mine should be discovered, and if new means for mining, etc., should be invented, so that an ounce of silver could be obtained by one half the labor it now costs, and that, too, in an unlimited quantity, the price of all things would rise—if we should still continue to make silver the standard—in nearly the same proportion; the fact would be that silver had become cheaper.

“Writers usually put the intrinsic value of the precious metals as measured by their purchasing power, in the reign of Henry VIII, or about three centuries ago (A. D. 1509—1547) at twelve times greater than now. But for want of a standard to measure the intrinsic value, or labor cost of the metals themselves, there is no proof of any tolerable exactness in the estimates that are made, even by the most capable persons, of the change of value of an ounce of gold or silver, after the lapse of centuries. And, if difficult for long periods, the rate of the process from day to day, or from year to year, is no less so, though of less moment. But the general fact is indisputable, that gold and silver have grown several times intrinsically cheaper, than

they were before the discovery of America, by Columbus." (Elder, Q. of Day, pp. 113—114.)

But labor is a constant. It is the product of time into human strength. Now the strength of men varies undoubtedly, if we compare man with man, at any time or in any place. But the average strength of men, in one age or place, is so nearly the same as that of any other time or place, that we may, for all our present purposes, assume it to be the same. Hence strength is a constant quantity.

Time is, of course, measured by the revolutions of the earth, and a day is twenty-four hours, the number of hours out of the twenty-four during which men can labor, however much it may vary if we compare individual cases one with another, affords, nevertheless, a constant average; the men of to-day, and of this country, can work just about as many hours a day, on the average, as those of any country or age. Hence *time* for labor is a constant quantity.

And with these two, labor will vary; two men unequal in strength, will perform equally disproportionate amounts of labor in a given time. Or, two men of equal strength will perform different amounts of labor in unequal times, the difference varying as the time. But at this average they become constant, that is, when men work all the time they can and with all their strength. We have the formula,

$$T \times S = L$$

and

$$T dS + S dT = dL$$

that is, time multiplied into strength gives the amount of labor. And as the time of labor and the strength with which men can labor, are both, when at their average or at their maximum, in fact, constant, the product is constant, and we have in that—which nothing else can afford—a constant standard of value.

208. *Importance of this view.*

To this everything, gold and silver no less than wheat, iron, cloth, etc., must conform; and they become really cheap or dear, cost much or little, just as they can be obtained with much or little labor. Hence it is that we never know whether a laborer is in a good condition merely by knowing the amount of his wages in gold and silver. We want to know what the means of living cost, bread, fuel, clothes, house rent, etc., how much of these he can obtain for a day's work, or a week's work; for the days and weeks of a year are limited, and in each the year comes around with the vicissitudes of summer and winter, seed time and harvest.

209. *Market value determines the coin value of gold and silver.*

There is one more consideration of great importance bearing upon the coin value of silver and gold. Being in demand for other purposes, and being not at all injured for other purposes by coinage, if the coin contains more silver than can be bought in the ingot for its price, say a dollar, the manufacturers will buy up the coin and melt it over for the manufacture of their wares, until the coin is all bought up, or has risen in price on account of the scarcity thus created. Or on the other hand, suppose the coin contains less silver than can be bought in the ingot for the same money, the coin is below par, no one will take it in payment except at a discount, and then, of course, it is driven out of market as uncurrent. The same is true, of course, of gold.

Hence we see that coin cannot be kept in circulation unless the quantity in a dollar, for example, is equal to what can be bought in the mass, for a dollar of other money, or a dollar's worth of any other commodity, labor itself included.

210. *Money and trade, how they enrich.*

In this view of gold and silver I think we find an ample justification for the assertion that they are

like any other product of labor, a part of the wealth of the community, and cannot be regarded as the entire wealth, nor yet as mere representatives of wealth. The man who has received a piece of silver or gold for his work, has received his pay in full, as truly and as completely as if he had received any other commodity, article of food or clothing.

And the view taken of traders in these lectures differs as widely from the more prevalent ones as it does in regard to money. It is very commonly thought, that because the richest men in a community are usually found among traders, and because commercial cities are the wealthiest, therefore, it is trade and the traders that make the wealth of a community. Exchange is indeed indispensable to wealth, and a class of traders is useful as a help to making the exchanges; but traders, as we have seen, neither produce the quantity, nor increase the intrinsic value—the two factors whose product is the wealth of a community.

211. *Trade enriches individuals.*

Trade, however, conduces more than any other kind of business to that unequal distribution of wealth which rises into view, in the form of great fortunes—to be counted by millions. And therefore it is that it holds out special inducements to those

who are anxious to grow rich rapidly, to amass large fortunes; and therefore it is that trade is supposed to be the most efficient means of making money, or of increasing wealth, when in fact, it is least so of all, if we regard the welfare of the community, rather than the aggrandizement of individuals. It affords to individuals the most rapid means of amassing a fortune, while of the great branches, agriculture, manufactures, and trade, it is the least conducive to the increase of the wealth of the country.

After the introduction of money, the next great agent for saving labor in making exchanges, is banking and banks.

The Bank of Amsterdam, established A. D. 1609, was the earliest considerable institution of this kind which looked to the promotion of commerce among the people: its predecessors of the twelfth century in Venice and Genoa having been chiefly devoted to the management of *state* finances. This bank was guaranteed by, and under the authority of, the city. It continued to promote the prosperity of the city for nearly two centuries. It failed in 1790.

Banks, or banking, as conducted in our time are for four distinct functions.

212. *Banks, (1) as places of deposit.*

Money being an object of almost, if not quite,

universal desire, and being also a commodity that can more easily than anything else be carried away and concealed, if once stolen, becomes an object of property calling for especial efforts to protect it against theft, burglary, etc. And it requires about as much labor and expense to provide for the safe keeping of a small sum, as for that of a large one.

Hence a vault or repository, in which one man can take care of the money of several men, is likely to occur as a means of economy, at a very early day. The man who keeps it is called a banker, and the money left with him is said to be deposited.

213. *Banks, (2) as places of exchange.*

Suppose a dozen men employ the same banker to keep their funds. It is not necessary, when any one of them wants his money, or a portion of it, to make a payment to another, that he should actually go and take the money out of the bank and pay it over. A much shorter method is to give the payee a draft on the banker. The draft being taken to the banker, he will credit the amount to the payee and charge it to the payor, and the exchange is as truly made, without the handling or counting of a dollar of the money, as it could be in any other way. The entries in the books must of course be made at any rate. But by this means millions on millions of

dollars of exchanges may be made without the labor of counting or handling a single dollar of the money.

214. Saving of labor thereby.

And, in fact, in all civilized countries, a large share of the exchanges and payments are made in this way. Men that have occasion to handle much money, make their deposits in some bank, make all their larger payments in checks, and keep on hand only the amount of money that is necessary for the smaller balances, that are daily and hourly occurring, when it is necessary to effect a balance, pay a bill, or "make change," without the trouble of going to the bank.

215. Clearing houses.

In towns and cities, where there are several banks, a bank for bankers alone, is usually established. This is sometimes called a "clearing house."

So long as there is but one bank in a town, all the men who keep bank accounts at all, will have their deposits there. But, in case there are several, each business man will give checks on the bank he does business with. A, for example, gives B a check, but B has no business with A's banker. He takes the check to his banker. Hence a necessity for the

bankers themselves to exchange with one another ; this is usually done every day after banking hours.

116. *Banks, (3) for discount and loans.*

It is manifest that if millions of dollars of exchanges can be made without handling the coin, they could be made, a large part of them at least, just as well if there were no coin in the vault at all.

But let us now take a different starting point ; let us suppose that a man who has capital (money) to lend, starts a bank. He can, not only keep the money of other persons on deposit with his own, and make their exchanges for them ; but besides all this he can lend money of his own to those who may have occasion to borrow.

Nor is this all. He can lend, also, a part of that which he has on deposit. After a short time he will find out about how much comes in, on the average, per day, and, of course, also how long, on the average, each dollar remains with him, and how much on the average, he has on hand at a time. Now suppose he should find that he has, on an average, a hundred thousand dollars on deposit, and that, on the average, each dollar remains with him twenty days, it is manifest that he can lend seventy or eighty thousand dollars of that which he has on deposit, for short periods—anything less than twenty days—

and yet always be able to meet the drafts that may be drawn upon him by the depositors—always I say—except when the day of winding up operations comes. He must cease making loans before that day arrives, in order to prepare for its arrival.


217. *Banks (4) for issue of bills.*

But we have another expedient still, affecting the business of banking, and of making exchanges thereby, namely, the issue of bills or bank notes.

Gold and silver, in large quantities, are heavy, and inconvenient, besides being attended with risk and loss. Hence, several consequences.

(1) In the first place, drafts on banks, are likely in themselves, to pass from hand to hand for some time, as representatives of the money that is on deposit in the bank. This the customers themselves will do, rather than take out the money itself, and carry it about with them.

(2) But, in the second place, the banker himself may issue his bills, provided he has capital of his own. In this case, instead of keeping the money deposited by each customer, separate and distinct, he counts it, places it to the credit of the depositor, and when he calls for it, gives him his own bills; that is, pieces of paper on which is written, or printed, or both, a promise to pay a given amount



on demand, at the banking house of the banker who issues it.

And this paper "currency" is—as gold and silver are *not*—a mere representative value. As such, it circulates so long as the credit of the banker is good, and does the work of money quite as efficiently and more conveniently than coin itself could do.

218. Paper currency saves loss.

(1) There is always some wear of coin in use—old coins become defaced. This is a complete and total loss, as much so as if a similar portion of gold and silver had sunk to the bottom of the ocean.

(2) Again, some of the coin will be lost in the way last named. A ship sinks at sea; a conflagration takes place; and in other ways coin disappears from the use of men.

It has been computed that in these ways not less than one per cent. of the coin actually in use is lost annually; this, as we have seen, is nearly half as much as the rate of interest in some of the more wealthy nations of the world. But,

(3) There is also safety to the individual himself in having paper that will serve in making his exchanges, instead of coin.

Suppose a man makes a draft, or holds a certifi.

cate of deposit, and that draft or certificate is lost, he loses nothing but the value of the paper on which it is written, nor does anybody. This is not true of ordinary bank-notes or bills payable to bearer; but *it is true* of other forms of representatives of value, which one can always take, and with which we can make our exchanges without risk or loss.

219. *Less specie needed.*

There is still another very important influence of banking considered as a process of making exchanges. It enables the banker to make a large amount of exchanges with a small amount of *specie*.

We have seen that the banker can lend a certain portion of his deposits, so that that portion will be doing the work of making exchanges in that form also: and then it is actually doing double work;

(1) As (by supposition) in the vault, serving as the basis of the exchanges that are made; by drafts emitted to the drawer and charged to the drawer; and,

(2) As actually in circulation, for so it becomes by the very act of lending it, that is, provided the loan is drawn out of the bank.

220. *The process of banking.*

To get at the whole matter at a glance, let us

suppose a man or a company begin banking with a capital, say of \$100,000. And for the sake of simplifying our statement, let us leave out of sight all cost of banking house, fixtures, etc., etc.

(1) He will need to keep a certain portion of his money on hand, as specie with which to redeem his bills when they are presented for redemption at his counter.

An examination of the history of banks shows that the amount of specie needed in a country village will not be much, if any, over ten per cent. of the capital, or \$10,000. In large cities, however, the proportion of specie must be larger, and in commercial towns it is often equal to the entire amount of the circulation, and is sometimes even greater.

(2) The remaining \$90,000 he can invest in stocks, bonds, and mortgages, etc., *bearing interest* at the lawful rate, which is seven per cent. in this State, New York.

(3) On this \$90,000, however, he can issue his bills, which will circulate as money, or currency rather. These bills he loans, accepting for them notes, etc., on time, and receives also, either interest or discount on the notes, which he thus receives in exchange for his bills.

The amount in bills that may be issued is often regulated by law. Thus under the old New York

system, as it was called, the bank was required to deposit its stocks, bonds, and mortgages, with the State authorities, and receive for them bills—not yet executed by the signatures of the bank officers—equal in amount to the capital thus deposited, which in the case supposed would be \$90,000.

Something of the kind exists now under our United States banking laws; that is, some limitation on the amount of bills a bank may issue, an amount proportioned to the capital or the deposits made to secure the redemption of the bills. But in cases where no such restrictions exist, the amount of circulation is limited only by the prudential considerations of expediency. Some years ago the amount limited by law, in one of the New England States, was double the amount of capital. And in some cases banks have been known to keep afloat three times the amount of their capital for some time.

221. *The banker's resources.*

Let us now consider the banker's resources. He has as means of redeeming his \$90,000 of issue,

- (1) The \$10,000 in specie reserved in his vault.
- (2) The \$90,000 in stocks which can, of course, be converted into money.
- (3) The notes, etc., which he has discounted and in exchange for which he paid out his bills.

And thus with honesty and good capacity on the part of the banker, his bills to the amount of nine or ten times the specie on hand are entirely safe, and one dollar in money is made to be, or at least to do the work of ten dollars in making the exchanges that are required in the business world. Of course all these estimates and proportions will change with localities, seasons of the year, and the kinds of business done in the community where the bank is located. But our object has been to state and illustrate the principle rather than to give exact practical working figures, that one might depend upon in going into the banking business. These must be ascertained in each case separately, and on its own merits and peculiarities.

222. *Loan of the deposits.*

I have taken no note, in this discussion, of the fact that a large proportion of the deposits—the deposits ordinarily in our American banks—equal or exceed the amount of the capital as loaned by the bank. A careful computation made a few years ago with the aid of a friend who was an experienced banker, showed that the amount of deposits that were actually loaned in this State, was over seventy per cent., varying all the way from sixty-three or four up to something above eighty per cent. of the deposits.

The data before us did not enable us to determine the average amount of time for which it was loaned. But probably it would have been quite short, not, I presume, exceeding twenty days.

But if we look at this as affecting the bank's solvency or ability to meet all its liabilities, we see at once that the notes discounted, on which these loans were made, must have exceeded in amount the money lent by the discount or interest on them, and they must have left over and above what they amounted to, a portion of the deposits not loaned out at all.

But anyhow, a bank is not strengthened—it is rather weakened—by this loan of a portion of its deposits; the total ratio of resources to liabilities, is reduced by it, and may, of course, be so far reduced as to render the bank unsafe. It is, however, a means of increased profit and income to the banker. Without it, as we have seen, he is able to realize interest on a good deal more than the amount of specie in his vaults; with it, the amount on which he receives interest in excess of his specie is very much increased.

And we must remember that the specie in his vaults, is about the only part of the banker's capital that is really at work, and earning the income of the banker. All else rests on this, or draws interest and does its work only because this is there as a basis.

The specie is to the banker, what "the capital," technically and properly so called, of other tradesmen, is to them; and all else, circulation, notes discounted, stocks owned, bonds and mortgages on file, are to the banker, what the wares and articles of merchandise are to the trader. They may far exceed in amount, the capital engaged in the business, and necessary for its safe and successful prosecution.

223. *The nature of "the loans and discounts."*

It may be necessary to state farther, as a means to a fuller comprehension of the whole subject, that "the loans and discounts," as they appear on the banker's books, do not represent, or bear any constant relation, to either the specie in the vaults, or the bank-bills issued by the bank, making what is ordinarily discussed under the head of circulation.

A glance at any bank statement, or report of the condition of its affairs, will disclose the fact, that as a general thing, the loans and discounts exceed the amount of both specie and circulation; thus, to use a statement now before me, which is a fair average statement: In the State of New York, Dec. 10th, 1851, the total specie was \$8,306,829; the total of circulation \$26,228,553; making together \$34,535,-382. But the loans and discounts on that day,

amounted to \$104,039,788, or about three times as much as the specie and bills together; the specie, of course, was not allowed to pass out of their vaults into circulation, so that the loans and discounts were about four times the amount of the bills, or money they had to lend.

224. *Loans deposited.*

The explanation is easy. Whenever a customer to a bank makes a loan of large amount, he does not want the loan in *money* that he can carry away with him. He prefers to have it in the bank, in the shape of credit to his name, so that he can draw upon it to make the payments he may have occasion for in the ordinary course of his business. Hence, when he borrows money, instead of taking the money, he prefers to leave it "on deposit," subject to his order. But there may be no money, as we have seen, that could be counted out and passed into his hands over the counter; none, for the reason that the loans and discounts exceed the money, by about four to one. So, when the draft comes in, the party to whom it has been given by the depositor in payment, may not want the money; many of them will not want it; they will merely want to have the amount credited to them in their bank account, to be drawn against in like manner by themselves, when occasion may require.

In the same way, the items of deposits greatly exceed the amount, whether in currency or in specie, that has actually been deposited; that is, passed over the counter of the banks into their custody. It consists largely of the "loans and discounts" that have not been paid, but only passed to the credit of the borrower.

225. *Necessity for a specie basis.*

This brings us to the very important question of specie payments, or what is called in other words, "the solvency of a bank."

The solvency of a bank, and the possibility of specie payments, must depend, of course, upon a certain ratio between the specie in the vaults, and the bills in circulation.

The paper thus issued, it will be remembered, has in itself no intrinsic value, or but little as old paper—perhaps three cents a pound. Its value consists in its being evidence of ownership; or, as is sometimes said, the intrinsic value consists not in the paper, but in the responsibility of the parties that issue it as a "promise to pay;" but more correctly in its being evidence of the obligation to pay the amount of the face of the bill.

Suppose, for example, I buy a piece of land. Since I cannot remove it, I take a deed of it; that

deed is evidence of ownership, and as such has an intrinsic value far exceeding that of mere blank paper.

Suppose, again, I buy a horse, and do not wish to take it away at the time; I take a bill of sale, and that is proof of ownership, and entitles me to take the horse at a subsequent time, as by contract agreed upon.

Suppose, again, I lend a man a sum of money, or work for him a day. I acquire thereby a right of ownership in something that is in his possession. He gives me his note, and that entitles and enables me to go and demand something equal in value to what is specified in the note or due-bill, and usually estimated in money; and in case he refuses or neglects to pay me, it authorizes me to take something of his as payment.

But suppose, again, instead of giving me his note he gives me bank-notes, or bank-bills, as we usually call them. I release him, and have no further claim on him, but I become owner by that fact, and to the extent of the face of the bills, of the stock and other property of the bank, although of course I am not regarded in law, nor am I in fact, a stockholder, technically so called.

226. *The effect of redemption.*

And if a bank should be obliged on any one day

to redeem or take in all its bills, the bank would have the bills indeed, but the former bill holders would have the capital, and all that the former stockholders would have would be the notes, etc., which they had discounted.

These, in like manner, would be in their hands evidence in the ownership in the property of their customers for whom they had granted the discounts, and their value could be collected out of these borrowers.

And thus, if at any one moment, all paper money, together with all other forms of paper evidence of ownership or indebtedness, should be destroyed, or pass on according to its original destination until it shall have reached maturity and accomplished its object, there would be indeed a change in the fact of ownership, but no change in the real aggregate wealth of a community. Only a vast amount of property would very suddenly "change hands," as the expression is, and rest in the hands of the true owners, so that the visible and apparent, and the real or true, owners would be the same parties.

But this case can never come until the final day of doom, and then we shall all have something else to think of besides getting our share of the pelf and peltry of this world.

227. Ratio of specie to loans and discounts.

At all times some specie will be wanted for change, and some will be wanted for foreign exchange, etc. Now so long as people can get enough for such uses, they do not want more: they had rather have paper, provided the banks are "good."

Bankers soon find by experience (and we may, by studying their reports) how much specie they need to meet their wants. More is required in the city than in the country. But taking the two together, we find the ratios pretty constant at about one dollar in specie to three, or a little less, of paper; and about fifteen per cent., or one in specie to six or seven of capital; or ten per cent. in the country, and twenty in the city banks.

The ratio of specie to loans and discounts may be changed by a change in either of the items—specie in the vault, or loans and discounts credited on the books.

(1) When there is a large balance of debt against us in foreign countries, specie must be drawn from the banks and be exported in order to meet that indebtedness; hence the necessity for so much more specie in proportion to circulation in commercial cities than in inland towns.

(2) When there are prospects of large crops and

an active business, banks are tempted to lend freely, and thus, if not actually to increase the amount of bills in circulation, to increase their liabilities in the form of loans and discounts credited on their books, which may be drawn against, and which, therefore, they must provide for, and which, as well as their bills, they must pay on demand in specie.

So that usually the ratio of specie to loans and discounts is much more important as determining the possibility of specie payment, than that of specie to circulation. This ratio is found to be about seven or eight per cent. or one dollar in specie for twelve of indebtedness in the banks in our country, generally: or rather, it was so in the days of specie payments before the war. But it is greater in the seaport towns than in the interior; that is, the loans and discounts cannot so far exceed the specie in the seaport towns as in the country.

The bank report for the United States, Dec. 31st 1874, gives the following facts.

Total number of banks 2027.

Capital, - - - -	\$495,802,481
Deposits (total), - - -	693,927,095
Loans and Discounts, - -	955,861,397
Specie, - - - 22,436,761	
Legal Tenders, - 82,751,791	
Legal Tenders and Specie, -	105,188,552
Bank notes in circulation - -	322,043,937


The Loans and Discounts are very nearly double their Capital, and nearly as large as their Capital and Deposits together; or to be exact, the Loans and Discounts are equal to their Capital and a little over sixty-six per cent., or about two-thirds of their Deposits.

The total amount of Specie and Legal Tenders combined, was to their bills outstanding, as 1 to 3.26, or their circulation was more than three times the Legal Tenders and Specie which are to redeem it.

The Deposits were in excess of their Capital by about the rate of three dollars of Deposits to two of Capital.

And the ratio of Specie and Legal Tenders together, to the Capital, was about one to five, or the Specie and Legal Tenders were only about twenty-one per cent. of the Capital.

Now, when for any cause the proper ratio between either capital, or specie and discount, becomes too small, the banks, having discounted too much, are cramped, and if it comes to be very much less, the banks are obliged to suspend specie payment, simply for the reason that they cannot supply the amount of specie needed for the business that will be done with so large an amount of indebtedness standing against them on their books.



228. *Limit to a bank's "circulation."*

And this is really the limit to circulation also, namely: the ratio between the amount of coin that is needed for redemption of their bills and the amount of paper that is needed for the purposes of exchanges; this ratio will vary with many circumstances.

(1) In times of insecurity and uncertainty, people are anxious to have as much of their means in specie as possible. Hence with the first alarm of war or other calamity, a run upon the banks, and a large amount of specie is drawn out to be hoarded.

(2) In times of large importations more specie is needed: since our foreign goods can be paid for—at least the excess of imports over exports—only in gold and silver; hence we have an additional item in favor of domestic exchanges as contrasted with foreign.

(3) The prohibition of small bills. In many States the issue and circulation of bills of a less denomination than \$5.00 has sometimes been prohibited. This will of course necessitate the keeping of a larger amount of specie in the banks to meet the demands of business.

229. *How banks cause fluctuations in prices.*

The agency of banks in causing fluctuations in

price is easily understood. When everything is favorable they discount largely, and that makes money plenty and prices high. But the moment they exceed what is actually needed for the business of the country, they become straightened and are obliged to withhold discounts, and "call in their circulation," as the expression is; this they must do in order to be in a condition to meet their liabilities.

This "calling in" of their circulation makes money scarce: prices fall; dealers lose; many fail.

It is sometimes thought and said that banks might relieve a "tight market" by further issues, or at least by forbearing to "call in." But we forget that they have already discounted until they are in danger. If, therefore, they should continue to discount, or keep out their bills, they would soon be unable to redeem them—they would fail, and then all their paper would become depreciated and worthless, and the country would be worse off than a merely "tight market" could make it.

230. *Return to specie payment after suspension.*

I have spoken of banking as being done by individuals and corporations; the effect will be the same if it be done by nations. Their paper will be at par when they can redeem it, as fast as it becomes due at par, either in gold and silver, or in bills on

specie-paying bonds. But if the ratio of specie to debts be too small, they can return to specie payments in either of two ways, and in one or the other of them only.

(1) By reducing the paper in circulation. This they can do by destroying it as it is paid in, and this they can do, of course, only when their income is in excess of their expenses. Otherwise the paper or something of the same kind, must go out to pay the liabilities.

(2) Or secondly, by holding on to the quantity of paper until the amount of specie increases by the growth of business to the normal ratio. This is a slow process; but in a growing country it is a sure one.

231. Ratio of specie to circulation in this country.

When our last war broke out, the amount of paper bills was about \$225,000,000; it is now \$725,000,000, or more than three times as much. The specie then was sixty millions; the specie now owned by the government, is not more, probably, than twice that amount, or about one hundred and twenty millions. The specie is about twice as much as then, the circulation three times as much. And whether the circulation be more than business wants require, or not, it is more by about thirty per cent,

than the amount of gold on hand can keep up to the par value. And gold is, as we say, thirty per cent. premium, or \$1.30. But more truly, paper is at about 75 per cent. its nominal value. The following table shows the amount of bills in circulation with the ratio of the one to the other, for sixteen years before the war :

	CIRCULATION	SPECIE	RATIO
1837	\$149,185,890	\$37,915,340	3.97
1841	107,290,214	34,813,958	3.08
1842	83,734,011	28,440,423	2.94
1843	58,563,608	33,515,806	1.74
1844	75,167,646	49,898,269	1.30
1845	89,608,711	44,241,242	2.02
1846	105,552,427	42,012,095	2.75
1847	105,519,766	35,132,516	3.00
1848	128,506,091	46,369,765	2.79
1849	114,743,415	43,619,368	2.56
1850	131,366,526	45,379,345	2.76
1851	155,165,251	48,671,048	3.19
1854	204,689,207	59,410,253	3.61
1855	186,952,223	53,944,546	3.46
1856	195,747,950	59,314,063	3.30
1857	214,778,822	58,349,838	3.72
Average			\$2.88

232. *The effects of over-issue.*

The lowest ratio was in 1844; it was then 1.30;

in 1857 3.72, and in 1837 it was 3.97; and in both these years we had a suspension of specie payments by our banks, showing clearly that 3.72 is above the ratio of circulation to specie which the banks in our country can carry.

The average for the sixteen years is 2.88, which may, perhaps, be assumed to be the safe one, or that at which the banks in our country are safe, and at which specie payments can be maintained. And about the same ratio is found to be safe and necessary in England, in France, and in other nations of Europe.

It will be considered that this is the average for the whole country. Each locality has one of its own, and for itself. In New York city the banks seldom, if ever, have so much circulation as specie, their loans and discounts consisting mostly of credits on their books. But in the country it is not uncommon for the ratio of circulation to specie to exceed ten to one. The ratio for the State of New York as a whole is about the same as that for the nation as given above, though a little higher.

233. *How money differs from other commodities.*

Money, whether paper or specie, is in most respects like other commodities. It obeys the laws of supply and demand, increase and diminution,

relative value, current price, etc., which have been already stated. But there are several respects, at least, in which these laws are completely reversed in regard to money, using that word to denote either coin or paper, or both together, as the case may happen to be.

(1) It is a general rule that when everybody, or nearly everybody, complains of a scarcity of anything and wants more of it, more is actually needed, the supply is inadequate to the demand, and not enough of it is produced.

But in regard to money it is quite otherwise. Money depends for its intrinsic value, as well as for its price, chiefly on its scarceness. Doubtless it would be a convenient and very desirable thing for *me* if, by some means or other, every dollar I have in my pocket could be doubled and made into two. But suppose the same thing should happen to *all other persons* in the community, so that the gross amount of money should be doubled, nobody would be the gainer thereby. Dollars would be worth only half as much, in consequence of the increase in their number; or, what would be practically the same thing, everything else would rise in price, in proportion to the increase in the amount of money in actual circulation. Hence the apparent paradox, that the fact that everybody wants more money is no proof that there is any real want for it in the community.

(2) Another very important point, in regard to which money follows directly the opposite of the common rule, is this, namely: while in all other cases the better of any two articles offered at the same price in any market will drive the poorer out of the market, provided always that the better can be supplied in sufficient quantity to meet the entire demand; yet in the case of money the poorer, if it can only keep itself in the market, will drive all others out.

This is not because the poorer is the best; but because we buy all other things to *use*, while we buy money to keep, as much and as long as we can, and to sell only when we are under the necessity of parting with it. Hence a man having two kinds of money in his pocket will keep the best to himself and pay out the poorest, if it will be received at all.

(3) Again, money is about the only commodity of which people want more than they really need. No man cares to get more food than he expects to consume. No one will buy clothes that he has no expectation of ever wearing. No manufacturer or trader will buy stock that he does not expect to work up or to sell. But it is not so with money. Everyone, except, perhaps, the worst and most thoughtless spendthrift, has a disposition to "lay up" something beforehand. One likes to have his pockets "well lined," even when he does not


expect or intend to spend his money. There is a foolish pride, as well as a commendable foresight, which predisposes us to seek to acquire and possess money, or that which can readily be turned into money, far beyond any expenditures or purchases that we intend to make.

These are, perhaps, the principal points in which money differs from other commodities that the statesman and the student of the philosophy of history will have occasion to take note of, in order to secure the best results in their several departments of labor and study. And there will be occasions when they must be taken into account as a means of saving us from gross errors.

234. What determines the amount of paper.

It is a fact of fundamental importance, that when paper money is at par, and so long as it is kept at par, the amount in circulation and use will be determined by the business wants of the country, and not at all, as is often supposed, by the amount of gold and silver that exists either in the form of coin or that may be converted into coin.

Gold and silver, as we have seen, have intrinsic value for other purposes than coin, and this is a controlling fact. It creates a demand for them for other purposes, and this is one element in controlling their price.



But the demand for coinage is undoubtedly the chief and controlling one. As much of them will be had for that purpose as is needed—and no more will be coined than is *needed*, whatever the amount in existence may be.

235. *Banking compared with other "business."*

Banking is for the most part like other business. Suppose a man about to start in any business; one of the first questions he asks himself is, how much business can be done in the community, and the next is, how much capital is needed to do it with.


So with a man about to start a bank. How much loans and discounts the business wants of the community will require? How much circulation, or paper currency? How much specie will be needed to do this business? His specie is really what the capital of the merchant or manufacturer is to him. If his business requires more than he at first expected, he will increase the amount; if less will answer, he will reduce it, taking it from that business to invest it somewhere else.

But how much business can a banker do? How much circulation or bills does he need? How much does the community want? As I have already said, money is in most respects like any other commodity, and obeys the same laws. And we accept them as far as they will apply with reference to money.

In regard to everything else, the fact of a universal demand, the fact that everybody wants more than he has or can get, is proof incontrovertible that more is needed. But as already said, this is not so in regard to money. And in fact, such and so frequent are the changes in the ways of doing business, that it is exceedingly difficult to argue from one country or state of business affairs to another. Thus, it is said in England, where there has been nothing to prevent the increase of circulation as the business of the country has required, there has been no increase in the circulation for the last thirty years, notwithstanding the immense increase in the amount of sales and exchanges, ordinarily requiring the use of money: the increase has been rather in the amount of exchanges effected on the books of the bankers.

236. How determine the amount of paper needed.

Suppose now, all the bankers of a nation can be considered as one man, and that one man is to do all the banking; and suppose, for the sake of convenience, he is limited to six per cent. interest on his loans and discounts, whether paid in bills over his counter, or entered on his books as credits to the borrower. He will, of course, lend all he can, and his customers will borrow all they can. And what



they can borrow, and what he can lend, will be the amount that is *needed* for that community. But how much will it be? He cannot, or will not, lend for less than six per cent. When business is prosperous, so that *safe* men can make more on the capital they can use, than six per cent., they will borrow of the bank, and the bank will be glad to lend them money. But the moment business becomes dull, from any cause, or the moment it is over done so that it will not pay six per cent. on capital, *safe* men will not borrow, and *unsafe* men cannot; the bank *cannot* lend *safe* men and it *will* not lend to *unsafe* men. Hence, it is no matter how much money the bank may have, whether in paper or in specie. It cannot force it into circulation.

The present condition of our currency is a good illustration of this law. The amount actually issued and in the technical sense in "circulation," that is, in circulation *de jure* or potentially, is over seven hundred millions of dollars, exclusive of fractional currency. But the bankers' report for January 1st of the year 1875, showed that only about three hundred and thirty millions of dollars were *actually* in circulation, that is, out of the banks. This is considerably more than one half the entire amount.

Hence, the law of supply and demand will determine the amount of currency any community *needs*—it cannot find out how much the people of that

community *want*, but it will find out and proclaim to the world just how much is needed, provided the banks are held to specie payment on demand.

If however the paper is unredeemable, there will, of course, be no limit to the amount issued, except the will of the Legislature that issues or authorizes it. With every increase of amount, however, there will be an inevitable decrease in value, or a rise in the prices of all other commodities.

237. *How determine the amount of specie.*

We can now pass to the consideration of the amount of specie that will be needed. We have seen that this is like the merchant's or manufacturer's capital. If the banker starts with more than he needs to enable him to supply the community with all the circulation it needs, as ascertained by the process just described, he will sell part of it. The coin he sells will not go into circulation, instead of paper; it cannot be forced into circulation in that way, except by some interference of the Legislature, prohibiting small bills, or requiring specie instead of them in some of the payments that must be made. It cannot go into the vaults of other banks, for, by the supposition, there is only one banker.

Or, if we choose to vary the statement, we may

say that after *the banks*, how many soever they may be, find that they have more than they need to keep the amount of paper thus found to be necessary afloat, they will sell it, and when they sell it, it will go into the melter's pot, to be converted into jewelry and other articles of merchandise. To keep it is only to lose the use of it. It would be like the merchant's keeping in use more capital than his business needs.

If, on the other hand, the banks find that they have not enough to "float" the amount of circulation needed, more will be coined to supply this demand. But no more will be coined than is needed ; it would be simply a waste of capital, using more than is needed for the maximum rate of profit on the business in which it is employed.

Hold bankers to the necessity of specie payments on demand, and allow them to issue paper at will, and they will soon determine how much currency is needed, and how much coin is required to serve as a basis for that currency. But the will and choice of man cannot much affect it. Legislation cannot set bounds to it. And no *publicist, doctrinaire*, or mere speculator, can determine it on theoretical grounds.

238. *Governments cannot control the amount.*

Even government itself cannot force upon a peo-

ple much more of a circulating medium than it needs. When the late war broke out we had about two hundred and fifteen millions of dollars in paper in circulation. With the breaking out of the war came an increase of the paper, and a suspension of specie payments; the war closed with about seven hundred millions of paper, or about three times as much as we had at the beginning of the war. But the war itself was a great "*business*," and made occasion for an immense increase in the circulating medium. At its close so much money was not needed, and rather than lie idle it gave a stimulus to other enterprises and kinds of business, until the business was overdone, or at least much was undertaken which the wants and conditions of the country did not require and would not justify. Hence failures and distrust. And now the paper is hoarded up, and in a sense it is scarce. Business men dare not expand, and capitalists will not lend. They had rather keep their money without interest than risk the loss of the principal by insecure investments.

The present condition of our country is both an illustration and a proof of this. The amount of paper *actually* in circulation—that is, out of the banks doing service as a circulating medium—on the 31st of December, 1874, was \$332,043,937. Gold was at that time, as usual, about \$1.15. Reducing

the paper to par, or eighty-seven per cent., and making the reduction, this amount was about equal to \$290,500,000 of paper *at par* value, or about \$75,000,000 more than just before the war. And this, notwithstanding the amount actually printed and executed, and technically in circulation was, including fractional currency, over \$750,000,000.

And, if we bear in mind the fact that nearly all prices are higher than before the war—the average being, evidently, more than the premium on gold --I think we shall see that the amount of paper money that the country really needs, nay, the amount that even government itself *can* keep out at the utmost, is only about the same as there was before the war of 1860.

239. *How gold and silver affect the amount.*

Gold and silver affect the amount of currency—so long as it is kept at par—only as other commodities having exchangeable value, affect it. The amount of property in any community, and the amount of exchanges are two important elements in determining the amount of currency, and gold and silver *as property*, exert their appropriate influence.

240. *Why no more is coined.*

But the amount of gold and silver that will be coined, will have no constant relation to the amount that there is in the market—the demand for them for other purposes, and their intrinsic value for those purposes is so great, that no increase of their quantity which the nature of the case allows us to expect, can greatly diminish their *price*, whatever may become their exchangeable value.

Hence no more of them will ever be coined than are needed to enable banks “to float,” as the expression is, the amount of paper that the business wants of the community demand, whatever may be the increase in the quantity that the various processes of mining may bring into the markets of the world.

If, however, there should be a sudden demand for currency, or the breaking out of a war, there will of a necessity be a demand for more currency than this amount of coin can carry at par: this will occasion the issue of more paper, and the suspension, for a time at least, of specie payments. Or, if for any other reasons, banks are relieved from the necessity of redeeming their paper at par on demand, they will of course increase their loans and discounts, and most likely their circulation also. And if compelled, and whenever they are compelled to return to specie

payments, they will reduce their circulation, but they cannot materially increase the amount of specie in the world by diverting more of the precious metals from other uses, and converting them into coin.

When paper is below par, except in the emergencies I have spoken of, it is not because there is not so much specie as is needed, but it is rather because there is more paper than there ought to be.

241. Effect of inconvertible paper.

But what difference does it make ? Why is it not as well that paper should be below par, as to have gold at par and paper redeemable ?

Gold and silver are, and ever will be, the acknowledged standard of value the world over. It may make no difference in the mere local exchange of known products, for prices will adapt themselves to circumstances. But the moment we enter into the commerce of the world we feel the difference. When paper is cheap and at a discount, as with us, everything else bears an inflated nominal value ; prices are fluctuating and uncertain ; successful speculators make large and rapid fortunes, and everybody else suffers in consequence.

242. *A practical test proposed.*

I think that the following practical test would settle this matter at once.

Let any one bank offer its notes for circulation, payable on demand in specie, and I think it would soon be found that they are so much better than any others that can be devised, or stand on any other basis, that in case the bank could supply the demand for them, no others would be received. In this case the better article would certainly drive the poorer out of use, because it would be regarded as too poor to be in circulation at all, and thus leave no chance for the competition spoken of in a preceding section, in which the poorer money always drives the better out of circulation.

Or at any rate, the paper of a bank that would redeem in specie on demand, would be as much above the par value of any other offered for currency, as gold itself, and possibly even more above par than gold. It would be better for many uses.

It may be said this is a mere notion, and a mere whim—a “survival” of ages less enlightened than our own—and that it is the duty of statesmen to do away with such an expensive delusion. But even the “whims” of business men, and the common sense of the community are sometimes better than the crotchets of mere theorists.

"If Berkeley says there is no matter,
It is no matter what Berkeley says."

There are some opinions that are so absurd, that, as it seems to me, the mere utterance of them releases us from all obligation to attend any farther on what their authors may have to say. And yet this attitude towards any opinion should be taken only with great caution, for, as a general rule, we are more likely to ridicule as senseless that which is too deep for our comprehension, than that which has no sense for us to comprehend. And yet I cannot but regard this idea which we sometimes meet with, of a paper currency based on nothing, convertible into nothing, as one of the kind that may be so treated.

The doctrine of a money based on a nation's indebtedness is quite a different affair. It can never give a satisfactory and stable currency. It will never be quite at par with gold. But there may be certain emergencies, certain crises in a nation's affairs, where a resort to it is the least of several evils from which the choice must be made.

243. *How money gets into circulation.*

It not unfrequently appears to me when reading the speculations concerning money and banking,

that the writers have either forgotten or never definitely considered how money gets into circulation.

Suppose a community in which there is no money. Some man has a portion of the precious metals which he is willing to coin. He coins them. But how, and on what conditions, will they get from him into circulation? Surely he will not *give* them away. He will not distribute them for mere amusement, or benevolently supply the wants of all the needy who call upon him.

I can conceive of only three ways, in one or the other of which he can be expected to part with his coin :

(1) To pay for the labor of some one or more persons who will work for him for wages, (2) to pay for articles which he wants to use, or to keep and sell, or, (3) he may lend it on promises to repay it, with good security.

Or if it be a government that has the gold and silver, it may coin them into money and pay it out for (1) salaries to those in its employ (2) for the supplies of various kinds which it may need, and (3) for any indebtedness which it may have contracted. But it can no more be expected to part with its money without receiving some value in return than the private citizen would. For, as we have seen, the mere coining of the metals does not at all impair their intrinsic value for the other uses for which

they are desired, and to which they may be converted.

And if now, we look at the issue of paper currency, we shall find very much the same law. If it is inconvertible—contains no promise to pay in any thing having value—no one will receive it. Not a man will work one hour for a mere piece of pictured paper, however beautifully executed. No man will part with what has cost him any labor, for such stuff. Nor will any one accept it in payment of a debt, except when government has declared it to be legal tender, and then he will consider himself as having been robbed of the amount of his claim.

244. *Paper not convertible on demand.*

But if we make the paper convertible—the evidence of a promise or obligation to pay a certain amount indicated in words and figures on the face of it, as is the case with ordinary bank bills, then we have three cases:

(1) It may be payable in coin *on demand*, and then it will be at par, and as good as the gold itself.

(2) It may be made convertible into government bonds *on demand*, and then its value will be determined by the nature of the bonds, their rate of interest, their convertibility into coin, and the responsibility of the government, etc.,—always *below par*.

(3) Or finally, it may be payable in coin, but, like our present greenbacks, *not on demand*.

In this case it will inevitably be below par; or gold will be at a premium, and all the commodities we may have occasion to buy will be held at prices far above what they would command if the paper were payable on demand, as the coin itself is above the par value of the paper.

245. *Premium on gold determined by the ratio of gold to paper.*

And this difference between the value of gold and that of the paper will vary in the first instance, and always with the ratio of the paper in circulation to the gold in the possession of the government or virtually at its command.

And we have seen that if it exceeds the gold by more than about three to one, the gold will be at a premium, or the paper below par; this is inevitable. And then there will be other elements in the difference between the price of the paper and that of gold, such as I have just spoken of (2).

But in any case it seems to me clear that inconvertible paper could not be put into circulation at all. The creditor might be compelled to take it for what he has already parted with, and go through the formality of giving a receipt for his claim. But

the "money" would stop there, unless he should happen to be owing somebody whom he could compel to take it, and so on. The only other thing would be the use of it in paying taxes, if the government would accept it in payment of them. And there, probably, it would end, or, at most, dwindle in value, to be determined by the demand for it as a means of paying taxes. And it would soon become worthless at that, for no one would consent to serve the government for pay in such money, and then even the government itself could not get rid of it.

Convertible paper, however, that is, paper that by virtue of any promise to pay which it should contain on the face of it, or of which it should in any way be the evidence, can not sink so low, so long as the government or the bank issuing it is solvent.

But it seems too plain for argument that a paper currency not based on and convertible into something that has a value besides and greater than its own, is an absurdity not to be discussed, even among sensible men, and it seems to be about equally as plain that a currency based upon and convertible on demand into coin, is not only the best that any nation can have, but that such a currency is the only one that can give any stable basis for the business transactions of civilized man. For reasons already given, it is better for the business wants of men than the specie itself.

CHAPTER IX.

OF OVER-POPULATION—HOPES AND PROSPECTS.

Wealth the product of quantity into value—Man's well being depends on distributive wealth—Effects of increasing and of decreasing wealth—Effects seen in large cities—Two theories of population—Reasons for Malthus's theory—Reasons for Carey's theory—How far satisfactory—The rate of increase of production—The rate of increase of population—Limits to the rate of increase of population—Statistics bearing on this point—Difference between civilized and savage society in this respect—Inference from the foregoing—Reference to the present condition of civilized nations—The rate of interest indicates the rate of increase of wealth—This compared with the rate of increase of population—Inference from these facts—A turning point in the law—Signs of approach to it—The effect of our reaching it—Changes in social and private habits—Fears of a *noblesse* of wealth—Reasons why there can be none—Unity of executive necessary—Effects of increasing intelligence—Fears of a violent assumption of wealth by the few—The poverty of the many no fault of nature—Economic effects of universal suffrage—Increasing regard for the principles of right—Improvement in the administration of justice—Approach towards social equality—No over-population possible.

246. *Wealth the product of quantity into value.*

We have treated wealth as a product of quantity into value, and quantity as determined by the num-

ber of persons engaged in the two forms of agriculture, farming and mining, fishing and hunting.

But quantity also bears some relation to the amount of land under cultivation as well as to the number of people who may be engaged in cultivating it, and both these elements, the amount of land under cultivation, and the number of persons that are engaged in cultivating it, are variable quantities. And although their variation is to some extent mutually dependent, yet they vary by different laws.

247. Man's well being depends on distributive wealth.

Moreover it is, as we have seen, not the aggregate wealth that determines man's well being, but rather the distributive wealth, in the particular community where he may happen to live; that is, the aggregate wealth divided by the number of the population. And this distributive wealth may be either an increasing or a decreasing quantity according as the ratio of variation between increase of population and the productiveness of the soil may happen to vary.

248. Effects of increasing and of decreasing wealth.

When the aggregate wealth is increasing more

rapidly than the population, we have an increasing distributive wealth and an improving condition of human life. And when, on the contrary, population is increasing more rapidly than wealth, we have a decreasing distributive wealth, and the people are consequently retiring towards poverty; and with general poverty there must of course come back upon us the state of barbarism.

This decreasing condition of distributive wealth is indeed one of the most powerful means of demoralization that is known to the student of the philosophy of history. It not only brings, in the end, and as a result, want, hunger, cold, privation, with all the train of diseases, suffering and death which insufficient food and clothing produce; but it produces, long before such an extremity is reached, anxiety in view of it, with a transformation of self-interest, which is commendable, into selfishness, which hardens the heart against all considerations of humanity and generosity; nay, even against the natural affections that bind man to his own "flesh and blood," his wife and children; with an immense relaxation of public and private morals, men rushing into crime and women into shame, until we have all the evils of which humanity is capable, concentrated and accumulated in one centre.

On the other hand, an increasing distributive wealth is one of the most favorable conditions for

promotion of intelligence, morals and refinement that we know of. In fact, so important and controlling are these two influences that all other means to promote or retard morality are of but little avail without them.

249. *Effects seen in large cities.*

Now what we thus contemplate in general and in the abstract is apt to occur in any large city, whither people are attracted by one influence or another in excess of the demand for the performance of any labor that is there to be found. Hence, while there may be a class who are growing richer, and while in fact the *general* distributive wealth of the city or the nation is increasing, we have a large portion for whom it is decreasing; and the effect is the same, if not worse, upon them than if the decrease were general, and extended to all the inhabitants of the city or the nation alike. These people usually collect or are forced together in some special locality, and make a Five Points for any city, a sort of pandemonium of accumulated brutality and beastliness.

250. *Two theories of population.*

Two widely different theories are held as to the ratio that exists between the increase of population

and the increase of wealth in the world at large, and on a smaller scale in every civilized community.

The one is known as the Malthusian theory, which teaches that after a certain stage, already reached in many countries, distributive wealth is a constantly decreasing quantity.

The other is advocated by Mr. Carey and others in this country, and holds that the distributive wealth is a constantly increasing quantity in all civilized countries.

Facts in great abundance can be cited—in fact, they have been cited—in proof of both theories. But, as I have said in the Introduction, facts never prove anything without an assumption, which may, of course, be false,—a mere *petitio principii*,—and thus vitiate the whole argument.

251. *Reasons for Malthus's theory.*

The Malthusian theory of population is usually held with the Ricardo theory of rent, and the two together teach—

(1) That population tends to increase in a geometrical ratio, or by the constant multiplication of the number of people of each age by a certain rate of increase.

(2) That wealth increases, at best, only in an arithmetical proportion, and this for two reasons:

(a) People, as he holds, always begin to cultivate the best and most productive soils first; so that at each successive stage and with each succeeding generation in a nation's history, they will be taking into culture lands of inferior productive value, and hence the average productiveness of the soil actually under cultivation will be a decreasing one.

(b) That the cultivation of the soil tends to wear it out, so that the same soil becomes less and less productive as time rolls on; and that, in consequence, in each succeeding age the land will produce less than in any preceding age.

Taking these two conditions together, we may represent the distributive wealth of successive ages by the quotient of the corresponding terms in two series, the one geometrical, and the other arithmetical, the terms in the geometrical series being always a divisor; thus,

I	2	3	4	5	6	7
I	2	4	8	16	32	64

252. *Reasons for Carey's theory.*

Mr. Carey, on the other hand, holds,

(1) That cultivation always begins with the poorer if not the poorest lands, on hillsides and hill-tops, where the forests are light and the soil thin; while the most productive soils are on the lowlands

—too heavily timbered and too wet for the cultivation of the first settlers—and hence, the *average* productiveness is an increasing one, in consequence of the fact that the portion taken into cultivation by each succeeding generation is better than that of the preceding.

(2) That cultivation itself, so far from wearing out the soil, tends, if properly conducted, to deepen and enrich it; so that instead of bearing less, it becomes more productive with successive generations of cultivators.

Hence, in considering the production of wealth as affected or limited, by land, we have three variables, which may vary independently of each other.

(1) The amount of land actually under cultivation.

This will, of course, be greater when the inhabitants of the earth number millions, than it can be when they are but a few hundred.

(2) The average entire productiveness of the soil actually under cultivation.

Ricardo holds, as we have seen, that it would be less when the earth, or any large portion of it, is pretty well occupied, than when there are but a few people, and that, therefore, the average native productiveness of the soil actually under culture decreases with the increase of population; so that a day's work, on the average, will produce less and

less. Carey holds the opposite view as already stated.

(3) The acquired productiveness.

Ricardo holds that the land becomes worn out, and so the *native* productiveness becomes less and less with each advancing generation. Carey holds, that with proper culture each acre may become more and more productive, and hence the acquired productiveness is an increasing one; so that a day's labor will produce more and more.

253. *How far satisfactory.*

There can be no doubt that Carey is right in the main, in the two last of these propositions. Both authors are agreed in regard to the first.

It is a fact that the first settlers in any country do not generally begin in the lowlands, which with proper cultivation will produce the largest crops. And it is undoubtedly true, and I presume both Malthus and Ricardo would admit it, if they were now living, that cultivation need not exhaust the soil, but on the contrary, if we will return to it in the form of manure all that we take from it, or its equivalent, it will grow more and more productive with cultivation.

But I cannot attribute to the premises of Mr. Carey the influence he claims for them in disproof of the Ricardo-Malthusian doctrine.

(1) The quantity of land that can possibly be brought under cultivation is limited by geographical and astronomical considerations that man cannot change. It is manifest that the soil on which any great city, or in fact any village of considerable size, stands, could not be made to produce food enough to sustain the people that now live upon it.

Suppose now under the law of increase of population already stated, population should become the world over as great to the square mile as in our cities and villages, or even approaching it, there could be no increase of the means of living equal to the increase of population.

(2) The productiveness of any soil is limited. Nobody supposes that an acre of ground, for example, could be made to produce an *unlimited* quantity of wheat. Hundreds and thousands of bushels to the acre is beyond human expectations—beyond possibility.

254. *The rate of increase of production.*

Hence, the first series of terms given above, that which represents the increase of productiveness of the soil, and constitutes the successive numerators in the preceding paragraph, though of the nature of an arithmetical series, cannot be regarded as having any *constant* rate of increase or common differ-

ence. At times, doubtless, the series will increase more rapidly than by a common difference of one, and at others, by a difference less than one, until, when *all* the land shall have been brought under cultivation, and the fertility of the soil shall have been increased up to the highest point, to which skill and labor can carry it, there can be no common difference, no farther increase at all, whatever may be the state of the population, whether increasing or decreasing.

And so, too, the "difference," or rate of increase in certain cases, *may* become a minus quantity, and give in succeeding quantities a smaller quantity of the products of labor with which to supply human wants. Doubtless such a thing, though possible, will be rare and most demoralizing in its influence, wherever and whenever it may occur.

255. *The rate of increase of population.*

Certainly the rate of increase in human population is of the nature of a geometrical ratio. Two parents, for example, may have four children, and they may, each pair of them, become parents, with four children in each family, and so on; and thus we have a geometrical series, with a ratio of two to indicate the rate of increase of population.

Of course this will not be the exact number in all cases. But it indicates the law of the series.

256. Limits to the rate of increase of population.

But to the operation of this law there are two limits, that the advocates of the Malthusian theory seem not to have taken into account; both of them limiting, after a certain stage in the progress of the race, the rate of increase, totally irrespective of any change in the distributive wealth.

(1) Human beings, like every thing else in the animal, and even in the vegetable world, become generally less productive as they rise in the scale of culture. We are all familiar with the fact that roses and others of our most highly cultivated flowers will produce no germinating seed; sometimes they have no seed at all.

The higher ranks in any civilized society, if we take wealth and cultivation as the standard, seldom produce offspring enough to keep their numbers, as a class, good. Most of the great men of the world have had no children; very few have had descendants in any direct line for more than three or four generations.

(2) As population becomes dense large cities arise and increase in number, and in the number of their citizens. But they are great consumers of human life.

I doubt if in cities with thirty thousand inhabitants, there are, on an average, more persons born

than die annually within their limits. In larger cities the number of deaths almost invariably exceeds the number of births. In New York it is about three to one. For some years past there have been in round numbers, births 14,000, deaths 21,000.

And this certainly not because there is not enough to live upon: not because New York State is not increasing in distributive wealth.

Dense aggregations of people, such as cities and armies, furnish an extended field for the operation of the causes tending to destroy human life.

The barrack and the camp are great nurseries of vice and disease, and far more destructive to life than the actual battle field, while the influx of fresh blood into cities and towns unprotected by sanitary precautions affords them the only refuge from depopulation and decay.

The tendency of population is to centralization.

Great cities and large towns thus become pestiferous centres, absorbing the vigor and energy of the country and increasing at its expense.

The causes tending to produce disease and death are more fatal and prevalent among a dense than among a scattered population.

In England, for example, from every class of diseases except two, the deaths were more numerous in the cities and larger towns than in the rural districts.

For the diseases called zymotic, and believed to originate from over-crowding and a general sanitary condition of the people, the deaths were twice as numerous in the cities as in the country, while for the *whole* number of diseases the deaths were forty per cent. more among the civic than among the rural population.

Of the whole ninety-five causes of death specified in the reports of the Registrar-General, only fourteen—and these among the least destructive—were more *prevalent* in the country than in the cities of England.

The reports of the Registrar-General give the ratio of deaths, in each of the six hundred and twenty-three registration districts, to the density of population, for twenty years, and show that the death-rate varies directly as the density and inversely as the advance of sanitary civilization. In the most crowded localities, with a population of two hundred and fifty to the acre, the death-rate was one in eighteen; while in the country, with from twenty to thirty-eight acres to the individual, the deaths were only one in sixty-two.

As another proof that the average life of man is shorter, his vitality lower, and his physical powers less fully and perfectly developed and less vigorously sustained in the city than in the country, I cite the fact that of the recruits enlisted for the British and

French armies who fail to meet the requirements of health, strength, constitution and stature, a much greater proportion of them are from the cities than from the rural districts.

257. Statistics bearing on this point.

I find the following statistics in the Philosophical Transactions, Vol. VII, pp. 10 and 214 of the Abridgment relating to the cities on the continent of Europe, chiefly German; I could doubtless find more recent facts on the same subject, but these are sufficient, I think, to justify me in the inference I have made.

CITIES.	BIRTHS.	DEATHS PER YEAR.
Breslau,	1295	1482
Vienna,	4104	6490 (A. D. 1720)
Dresden,	1396	1850
Leipsic,	760	1300 (A. D. 1719)
Ratisbon,	250	220
Nuremburg,	1084	1063
Copenhagen,	2630	2247
Dantzic,	1833	1435
Weimar,	100	183
Berlin,	2701	2499
Lobau,	226	171
Freyburg,	262	321
Erfurt,	666	448
Augsburg, 19 y.,	347,481	394,837
Totals,	370,030	415,806

or a rate of births to deaths nearly six to seven. It will also be noticed that, with important exceptions, the excess of births to deaths is in the smaller towns.

Doubtless improvements in sanitary regulations will change the ratios for the better. But still I think that the general principle holds good, that there is a tendency to increase the death-rate above the birth-rate in large towns, with densely crowded population, scarcity of food, insufficient cleanliness, foul air, and still fouler habits and morals.

258. *Difference between civilized and savage society in this respect.*

We have, then, two causes that influence the rate of increase of population, bearing directly upon the ratio given on a preceding page, namely:

(1) With higher culture, the births among the better class will be fewer, and

(2) In the lower classes the deaths will be greater in proportion to numbers.

Now there can be no doubt that the rate of increase is of the nature of a geometrical ratio, as expressed by the successive denominators given above; and yet, the ratio itself is not constant. It may be true for several generations in some states of society and some conditions of human life. But

in others it will, for the two causes just named, be less, so that it may become unity, with, of course, a population stationary. And with war, pestilence and famine, and epidemic diseases, it may become a fraction; in which case the series is a decreasing one, and we have a state of things most unfortunate for human morals as well as for the physical well-being.

And it is worthy of special note, that at present and in this stage of human history both causes co-operate infertility of the highly cultivated and frequent deaths among the vicious, debased, and poverty-stricken population of our large towns. In a savage state, only the latter cause would operate to any considerable extent. But as we pass to a higher civilization, and approach the last stages of human existence, the opportunity for this cause will, as I think, disappear and the other come into fuller operation, and control the conditions of society and the destinies of man. And thus we shall have a state in which there will be and can be no over-population, and that too without death-rates increased by starvation, or by any other cause or influence than such as men and women choose to impose on themselves, irrespective of any question as to the ways and means of raising and providing for the children that may happen to be born to them.

256. *Inference from the foregoing.*

Taking then the two elements, (1) rate of increase of production, and (2) rate of increase of population, into consideration together, and considering the controlling causes that influence the nature of the rates, we find that there must come a time when the productions of the soil and the means of human subsistence shall have reached its highest limit, and can go no further; and a time, also, when the ratio of increase to the population will be reduced to unity; and then we shall have no further increase in the total or aggregate population of the earth.

From the nature of the case, the two conditions, though *to some extent* independent of each other, are not, nevertheless, *so* independent but that they must occur at about the same time.

260. *Reference to the present condition of civilized nations.*

Another general fact will be useful in confirming our position.

In all the nations of Europe and in America, too, for that matter, there has been, indeed within the last three hundred years, a great increase in the density of the population. But there can be no doubt that there has been a greater increase in both

the aggregate and the distributive wealth, also, from which it is evident that the aggregate wealth has increased faster than the population.

This might not be inferred, or admitted even, if we were to look only at the conditions of the poorer classes alone. But if we look into the mansions of the rich and consider their style of living, the amount of the products of labor they consume in the family, their houses and their tables, their wardrobes and their stables, and compare these items of expense with what their ancestors, some three or four hundred years ago, were accustomed to, I think we shall find reason to accept the statement that both the aggregate and distributive wealth have greatly increased.

261. *The rate of interest indicates the rate of increase of wealth.*

But looking at the rate of interest and the rate of increase of population as independent facts, we deduce a conclusion that is both illustrative and confirmatory of the general doctrine just announced.

The rate of interest indicates the rate of increase in capital: that is, it indicates the rate of increase in distributive wealth, that would result if all the wealth were used as capital—the rate of increase therefore, that is always possible for a nation.

Thus, suppose a man with five thousand dollars capital and employing two men, can make a certain net amount of profit in a year. Now suppose that with one thousand dollars more of capital he could make one hundred dollars more after paying for whatever of additional cost there may be in carrying on the business, arising from this increase in his capital. It is manifest that he will hire that one thousand dollars, if he can get it, for a rate of interest that is less than ten per cent., or one hundred dollars on a thousand; that is, he will pay nearly all he can make more, in consequence of the use of the borrowed money, for the use of that money. But of course he can make that amount only because a thousand dollars capital can be made to produce that additional amount of value. Hence the rate of interest is an indication of the increment in distributive wealth, or the addition that is made to it year by year. If this be great, interest will be high; if small, the rate of interest will be low.

262. *This compared with the rate of increase of population.*

If now we turn to some of the leading nations of the earth, we find that the rate of increase in population per year, is about as follows;

United States,	-	-	-	3.00	per cent.
England,	-	-	-	1.80	" "
Austria,	-	-	-	1.30	" "
Prussia,	-	-	-	1.40	" "
Netherlands,	-	-	-	1.30	" "
Naples,	-	-	-	.83	" "
France,	-	-	-	.60	" "

The list might be extended so as to include all the nations of the civilized world.

Now the rate of increase of population is not probably in any one of these cases, or in any other that can be cited, more than one-half so great as the rate of interest, even when divested of all increments on account of risk, uncertainty of payment, etc. In the United States, at the time referred to above, the average rate of interest was more than five per cent. In England it was not less than three per cent. In the Netherlands it was more than two. In all cases the rate of interest is greater than that of the increase of population, showing conclusively that wealth is increasing, even in our richest and most densely populated countries, much faster than the population among whom it should be distributed.

263. Inference from the facts.

It must be manifest, therefore, that any increase to the population must give an increase to the rate

at which wealth will be increased until we have the operation of this arrested by one or the other of the following facts.

- (1) No more land to be taken into cultivation.
- (2) No possibility of increasing the productiveness of that which is under cultivation.
- (3) No new article, which having been hitherto useless, may be utilized.
- (4) No discovery of a new use for an article, which has been already in use, that may increase its intrinsic value or power of satisfying human wants.
- (5) No possibility of greater economy in consumption, so that what we use will be made "to go further" as the expression is.
- (6) No further reduction of the "waste" which is in some measure inseparable from all forms and conditions of human life.

Short of these limits, the aggregate wealth may increase with the increase of population, and for reasons already given, it must increase more rapidly than population up to a point very near to those limits.


It must be understood moreover, that the increase of wealth will not be arrested by the reaching of any one, or in fact, any part of them alone; they must all be reached before there will be a stop to the increase of the aggregate wealth of the world.

264. *A turning point in the law.*

But it is certainly possible, and in fact highly probable, that long before this time the limit to the increase of the *distributive* wealth will have been reached, that is, the point at which no more can be produced during the year by the labor of mankind than will be consumed by them during a similar period.

The history of the world furnishes examples of decreasing wealth and population, as well as of the reverse. The plains of Mesopotamia, "the marshes" as they are called, about Rome, are examples. In all these cases the decrease of population caused an abandonment of the most fertile land, simply because they required more labor for their cultivation than the decreasing population could give. Notwithstanding these lands yielded when properly cultivated more per cent., and more for each day's work bestowed on them, they were the first to be abandoned, as they were the last to be brought into cultivation.

With a decrease in wealth and population, comes also an abandonment of the precautions taken to retain the richest or marsh lands for agricultural purposes. Noxious malaria is thus permitted to *invade* the salubrious districts; it invariably advances upon the decay, and retreats before the growth



of civilization. The Pontine marshes have sickened the district of Volci and the Eternal City for many an age, the noxious malaria of the Maremma has been long familiar, and to that agency alone do the people attribute their inability to overcome the effects of the pestilential invasions of the sixteenth and seventeenth centuries.

Hence it seems manifest that from the first settlement of a country, or the first step in the process of emerging from savagery, wealth will increase more rapidly than population, and thus give a constantly increasing distributive wealth.

But there is a point, as we have seen, at which this ratio of the two increments must cease. I have indicated that point as the concurrence of five contingencies, but practically they will all come to one, namely: the time when there is no more uncultivated land to be brought under culture as a means of production.

265. Signs of the approach to it.

Of the approach of this period there will be several signs, and beyond it there will be certain consequences which it may be well theoretically to consider.

The first sign is this, interest on money, or what is the same thing, rent for capital will be reduced to a minimum, and most likely to nothing.

I refer here only to the facts proved to be the result of an inevitable law, that interest decreases as capital, or distributive wealth increases in quantity or amount.

And it may be well to remark that capital is always distributive wealth, and distributive wealth is capital; this results from the fact that every man uses up his annual income in *some way*. Even if he invests it in bonds or stocks, it becomes capital for the support of labor. Railroad stock, for example, is but the representative receipt for money paid towards the labor of building and equipping the road, or of obtaining the right of way, etc., as preliminary conditions to its construction. National stocks form no exception. They represent *now*, largely, work that was done in the late war as a means of preservation to the nation itself, and thus the money invested in them is, or has been devoted to the support of labor.

But to return to the fact. It is obvious, at first sight, that the richer the country, the lower the rate of interest. In all new countries it is very high, twelve and fifteen per cent. In New England it is six per cent.; in New York seven; in England four or below; in Holland and Belgium still lower.

266. *The effect of reaching it.*

Under this law the time must come when interest

and rents will be so low that nobody can live on them alone, without productive labor and exertion of his own. For, before we reach that limit, all such institutions as primogeniture, entail, jointure, etc., by which large estates are locked up and kept together, in and for the use of a single privileged family, as in England, must have been swept away by other influences than those that mere Political Economy takes note of.

Hence at and before this period in the world's history, accumulated wealth as a means of support, must be drawn upon like the oleagenous matter in the system in the animal economy when disease has impaired the processes of digestion and nutrition.

All will of necessity become laborers, and all will be gradually approaching that condition, in which all will be nearly equal; for all will be reduced, each one to that which he can do, even with his own hands and by his own skill; and the utmost production of all labor combined can do no more than to produce what is needed from year to year for consumption.

267. *Changes in social and private habits.*

First in the order, all mere waste will be stopped; we must give up tobacco and whiskey; and the luxuries, as they are called, will be dispensed with.

And I have no doubt we shall have an increase of health and longevity, as well as a great improvement in public and private morals, with this change.

And doubtless some of those things which are called "conveniences," will be the next to go, and with them, or with what will then be considered as belonging to and constituting this class—there will probably be no loss to the cause of health and good morals.

And at this period, I have no doubt that in obedience to laws I have already stated, there will be such a modification of the rate of increase of population, that there will be little if any farther increase at all; and the births, without any restraint imposed by the state or other agency than the voluntary choice of the people themselves, will not be more numerous than the deaths that will occur without violence and in the ordinary course of nature.

268. Fears of a noblesse of wealth.

But it has been predicted, in view of the vast power which wealth, as acquired capital gives to the man who possesses it, that there is a prospect that those who have it will acquire by the natural operation of the laws of Political Economy, at a constantly increasing rate, until nearly all the wealth is owned by these business men, and managed by

them so that we shall come to have a *noblesse* of wealth, in the near future as we have had a *noblesse* of political power in the past ages of mankind. Such persons argue that as capital in the shape of tools, machinery, etc., gives to the laborer increased capacity to produce commodities, there is a tendency towards greater diversity in the amount of wealth that will be possessed by the individual, arising from the fact, that he that has the most capital to work with, can make money the fastest.

Now this is to some extent true. The introduction of machinery, with a consequent division of labor in any kind of manufacturing, will drive all the small manufacturers, who labor without machinery, out of business, and close their shops.

The same is true to some extent on our farms: the man with a large farm can afford to buy and use expensive labor-saving implements, which his poorer neighbor, with but a few acres, cannot afford to buy. Hence, in all our counties that have been settled fifty years or more, and that are pretty thickly settled, the owners of small farms are selling out, and their lands are being absorbed into larger estates. And, in the same way, small manufactories are being merged into larger ones.

269. *Reasons why there can be none.*

But there is a limit to this increasing disparity in the distribution of wealth.

There is always a limit to the amount of capital which any *one* man can use with increasing rate of profit.

It will be understood that I am speaking only of the legitimate means of acquiring wealth—agriculture, manufactures and trade; what I have said may not be true of speculation. In that way of getting wealth, the larger one's capital the greater may be the extent to which it will enable him to make combinations, buy up stocks, force "corners," and the various other operations known to the craft. But this is exceptional and abnormal. Even now it meets the disapprobation of the moral sense of mankind, and there can be no doubt, I think, that means will be found in the progress of civilization to slough off this diseased tissue and get rid of this perpetual ulcer on the body politic.

This kind of "business" is greatest and most sought for, when the rate of interest is high, the country unsettled, and prices and values are fluctuating. It is merely a temptation to men who are not disposed to do anything to increase the actual wealth of the community, to put in their hands and clutch all they can get hold of, of the products of other men's labor: they buy and sell for none of the legitimate purposes of trade; they do not wait for the natural rise and fall in prices, though ready to take advantage of them; they buy to force up

the market, or they sell to "bear" it down ; and are really but little better entitled to the gratitude of mankind than the incendiary who sets fire to a town only for the chance of plunder, which the conflagration, that his criminal act has produced, affords him.

270. *Unity of executive necessary.*

Any kind of business that deserves the name of business, or is in any way useful to mankind, requires, in order to the highest rate of profit, to be carried on as a unity, and must be supervised and managed by some one mind.

Now when in any case the business of any establishment or firm gets to be so large, that no one man can give to it, and to all its parts the maximum of skill and attention, some man with the same amount of skill and industry, and less capital or business to manage, will make money faster than he does, that is at a faster rate, though perhaps not so much in gross amount per year.

Again, much will depend upon locality, especially in matters of exchange. A merchant in New York needs more capital than he could well manage in a country village. This is notably true of banks. In the country the capital seldom goes beyond one or two hundred thousand dollars; in the city it

sometimes reaches fifteen or twenty millions. It takes but little if any more time and care to make entries and look after accounts that amount to thousands of dollars than those that count by tens or hundreds.

271. *Effects of increasing intelligence.*

But a most important limitation is to be found in the intelligence of the people themselves. In a country of savages alone, ignorant and unskilled, there is no doubt that one man could produce from any large tract of land more as owner and controlling mind than they *would* produce if left to themselves, or could produce if they were each one of them to direct his own efforts in his lack of skill.

But convert these mere ignorant operatives into intelligent farmers, each as capable of managing a farm as the one supposed capitalist, and the tract of land would require to be subdivided into much smaller farms, in order that we might get the benefits of each man's skill or realize the greatest rate of profit on the capital employed in its cultivation.

We find, then, that in the increase of the number of educated laborers there is a limit to the tendency to accumulate the wealth of a nation in the hands of a few, and that a constantly decreasing portion of the population, and hence a corresponding ten-

dency towards an equality in the distributive wealth.

But the great fact is, that with any increase in the intelligence of the people there *will* be a greater utilization of the forces of nature; they will be compelled to do more and more of our work for us. Human labor will be a constantly decreasing portion of that which makes up the intrinsic value of the articles we have occasion to use, and the exchangeable value we have to pay for in purchasing them. Hence they will be cheaper and evermore becoming cheaper, and thus more and more within the reach of the mere laborer, increasing not only his comfort and means of enjoyment, but *also* his power to *accumulate* and become a capitalist, and thus reap the profits due to the capital employed, as well as receive the wages of the labor performed. Hence to every intelligent and competent man the way is opened to the possession and ownership of as much capital as he can use with a maximum rate of profit, or as is necessary to his happiness and welfare.

272. *Fears of a violent assumption of wealth by the few.*

Again, there are those who predict that as we approach the time when the earth is so full that there is a prospect of want, the powerful and cunning few will get the wealth into their hands by some violent


means, assume all political power and control, and devolve all the evils of the want and destitution upon the laborers, so that they will be only the worse off, the more numerous they are.

There is much in the present condition of the wealthiest, and most densely populated nations of the old world, as well as in the history of the past, to give plausibility, if not probability, to this view. But I have been speaking of the time when the "whole world" shall have become so full, as to bring about these results everywhere, rather than of the case as it may occur in any particular nation.

In this age, emigration has come in to play a most important part. It not only carries off the surplus population; but the surplus of capital also goes abroad, seeking investment where it can find offers of greater returns, than can be expected at home. For these two reasons, the exportation of labor, and the transfer of capital, we do not see in any of the nations of Europe, all the legitimate effects of the growing density of their population. Rents are not so low, and the condition of the laborers is not so bad, as it would have been, had not this means of relief been extensively in operation.

273. *The poverty of the many no fault of nature.*

But why, one very naturally asks, will not all



these evils come upon us in their most aggravated and most unmitigated forms when the earth itself gets so full that there will be no place for emigration to transfer, either wealth seeking new investments, or laborers in search of employment and the means of sustenance? To this question I answer that the wealth of the few or poverty of the many is no fault of nature, or of the Author of nature. It is rather the fault of man. No nation of any considerable size has ever yet had so many people that with equal laws, fair distribution, and proper frugality, it could not abundantly support them all. And for reasons already assigned, I think we may safely affirm that no such phenomenon will ever occur.

If now we look into the nations where there has been the greatest complaint of "over-population," we shall find causes at work, quite other than the laws of nature, that are sufficient to account for what has occurred. We not only find a large moneyed class, but we find them in possession of the political power as well. Selfishness there does not enable them to grasp all they want, notwithstanding the poverty, the destitution, and the starvation of the masses. But this cannot always continue: there is one country now, where it cannot possibly occur. Give us a country in which the people are comparatively intelligent, and have been accustomed to the possession and exercise of political

rights; to choose their own officers, and through them to make and execute their own laws; and any approach to the limit where population overtakes the power of the earth to support it, will show itself in the gradual approach towards an equality of wealth; leaving behind an inequality only as great as that which exists in the productive value of each man's ability to create wealth.

274. Economic effects of universal suffrage.

I look upon the formation of the American Republic, now that time and the experience of a century have proved it a success, as one of the greatest epochs in history. I know of only one that I would reckon its equal, and that is the introduction of Christianity. The political equality which was here established, was the great and characteristic feature of the new era for humanity. Here the people are voters, and the people are laborers. Hence the laborers do the voting, they get accustomed to respect and to exercise their rights, they will see that their rights are guarded and enforced; and among them, as the most sacred of all, the right of the laborer to his hire, and the right of every man to the wealth he lawfully acquires.

It is evident, I think, from the condition of things at present, that this relation of the people, one to

another, is approaching in all the nations of the old world. Privileged classes must go to the unrelenting receptacle of the past, and long before the earth will have become so full that she can sustain no more, and the ratio of the increase of population will have become unity, universal suffrage will have become universal in fact, as well as in name. And then no grasping few, however selfish and well disposed to do so, can secure and hold to themselves an abundance, while the many are starving or waiting in undesired idleness, kept from creating as well as earning for themselves a living. There will be no class trained to servility, and accustomed to the abnegation of their rights, to submit to such tyranny. The sacred awe for superiors will have passed away, or cease to exist in any such sense as to allow them to monopolize the means of subsistence and enjoyment.

Hence the power to acquire and hold the wealth by the few will have passed away ; they cannot do it by physical force—they will be too few in numbers for that. They cannot do it by moral means, or rather the immoral means of superstitious veneration for superiority of rank ; for the people are too much enlightened and too irreverent for that. They cannot do it by any voluntary consent of the people ; for, however it may happen that here and there one may consent to starve that others dearer

than himself may eat and live, this can never be the case with the masses; and the masses will see no occasion for their sacrificing themselves for others who, so far as they can or will see, are no better than themselves.

275. *Increasing regard for the principles of right.*

And I have no doubt that as the period we are contemplating approaches, there will be an increasing regard for the moral principles, which now and ever lie at the foundation of all society, of all government, and of all law. I have already intimated my belief that it was man's entering upon that stage towards civilization, where labor becomes a necessity, which, if it did not originate, did certainly give a most important impulse to the development of man's moral nature. From that time to this, there has been, indeed, even in the midst of civilization—to say nothing of what has occurred among savage and barbarous nations outside of it—two diverse and opposite tendencies of the influences at work, according, as I think, to the diversity in the natural constitutions of those upon whom the influences have been operating. But the tendency has been, on the whole, upwards and for the better. And that must be so hereafter. The means of living becoming scarce in proportion to the population

that want them, and there being no privileged classes who may, and no selfish class who can, take to themselves the lion's share, each one of the better disposed will become more jealous of the rights of property, especially the rights of the laborer to his share, as contrasted with that of the capitalist. Hence, clearer notions of right and the passing away of many of the principles of "the law merchant" which now pass current, and are accepted by everybody, must ensue.

276. *Improvement in the administration of justice.*

Nor will it be merely a change in the notions and views of the rights of property; there can hardly fail to be greater certainty of detection, and greater severity of punishment for any unlawful means of getting property. And some of the measures that are now allowed or winked at, will then be regarded as unjust and consequently made unlawful.

But at present, John Jacob Astor may be worth his forty or fifty millions of dollars, and be honored and respected by every body, and as completely protected by the laws of the state and all the force of the general government, if need be, as the poor man in the enjoyment of his daily wages. Perhaps a few lazy, vicious, or improvident spendthrifts may curse him for *their* poverty. A few unfortunate

widows and invalids, who are poor and destitute from no fault of their own, may, with good reason perhaps, feel that he ought to be a little more liberal of his abundance in supply of their necessities. But the great mass of the people regard him with admiration and envy rather; everybody is glad there are such men. He is an example that shows what others may become. His very existence shows that a man may be worth his millions and nobody the worse for it, but rather the better. It shows that such men may not only exist, but that they may each of them be regarded as a public blessing, a philanthropist, a benefactor of his race. And so doubtless, such men are, in the present stage of the world's history. But let the time come when all that the combined industry of the world can do, is to produce as much as the inhabitants of the world will need to meet their annual consumption, and the state of things will be greatly changed. Not all the armies and navies in the world could protect a man in the ownership of so much wealth, for there could nobody be found that could be compelled or hired to serve in an army or a navy that is to be used for such a purpose.

So long as there does not appear to be any limit to the wealth that may be had, so that one man, by getting rich ever so fast, does not seem to be any hindrance to others getting rich as fast as they please,

but is rather an example and an encouragement to them, they are not likely to look very carefully at the means by which he acquires his property. They care but little for that so long as there are no violent outrages upon the property of others, as larceny, etc. But when the time comes that everybody sees that A by getting rich very fast, is in consequence of the limitation of the amount of wealth, by just so much a hindrance and an obstacle in the way of B and C and all their neighbors and fellow countrymen, to the end of the alphabet, getting rich at all, or even getting a living, they will become exceedingly jealous and watchful, and see that by no means, and under no pretence of law or right, shall anybody get anything more than a fair compensation for the work he actually performs in some department of useful industry.

Long before that time arrives however, men will become jealous of the means by which large fortunes are gained. Stricter notions of honesty and more vigorous means of enforcing them will prevail, with great benefit to the public, as well as the private morals of mankind. And thus while there will doubtless be individual instances of persons or of small neighborhoods in which the influences that tend to advance civilization, appear to exert a demoralizing effect; making men and women worse; proving itself, as in fact, something better than even

civilization has been declared to be—"a savour of death unto death" unto some; yet, on the whole, the increasing diversity of the population must have for the race at large, a tendency upwards, towards a higher moral as well as a higher intellectual level; the very "struggle for life and the survival of the fittest," will work in this direction, and may be regarded as good for this result. When starvation is staring men in the face, they will not be so indifferent as now, either to the crimes that take from them the means of living, or to the virtues that multiply that means and tend to secure its more equal distribution.

277. *Approach towards social equality.*

And I think, too, that this equality of pecuniary condition, or rather, the near approach to it—for equality is a limit which it can never reach—will tend to improve men and society, in other ways than the one I have more especially spoken of. It will, I think, make men all alike in one respect. Even if they are not equal, they will all be obliged to work and earn a living. Hence, one of the greatest causes of the rivalries and jealousies, that have hitherto done so much to harden the hearts, and embitter the lives of mankind, will be done away, and replaced as we think, by a sympathy and fellow-feeling, that

is the parent and fruitful source of most of the domestic and social virtues, and without which, they cannot exist. "The love of money" is the root of evil only when it becomes the love of that portion, or amount of money, that may minister to vice, or enable one to lift himself above the common wants, and the common sympathies of his fellow-men, into that aristocratic and self-indulgent isolation, where some measure of indifference becomes indispensable to the maintenance of the "position," in which their money has placed them.

278. *No over-population possible.*

Hence, instead of expecting any "over-population," in the sense in which the words are ordinarily used by Political Economists, I regard the thing as impossible. On the contrary, I look upon the increasing density of population in the world, as one of the indispensable conditions of an advancing civilization, and as one of the most efficient means towards a greater freedom and equality, a higher morality, and a more enlightened humanity, than the world has ever yet seen.

But I expect nothing, however, from Political Economy, without Christianity. I believe in "original sin," an inherited depravity working inwardly to produce tendencies to evil which "remaineth even

in them that are regenerate," and which no mere education in the principles of science, no combination or force of external circumstances and conditions, can wholly eradicate ; and certainly this will always produce evil men and evil deeds, unless, indeed, in some far off future, and some widely different circumstances of our race, the cleansing influences of the in-working Holy Spirit of God shall effect a renovation in the race at large, like that which has actually been wrought in rare instances in men from the days when first the Holy Ghost was poured on the believing few on that early Pentecost in the first century.

But we shall have, as I believe, in the future, constraint and pressure of outward circumstances conspiring with inward convictions and the influences of the Holy Spirit acting through the doctrines and institutions of Christianity, to bring in an ideal state of humanity, a golden age of perfected manhood. Then there will be none, as I think, so rich that they will not need to work, and none who will work, so poor that they will need be ignorant, vicious, or vile.

APPENDIX.

An Essay on "the Relations of Labor and Capital from a Christian point of View,"—Read before the First American Church Congress, New York, October 7, 1874, by the Rev. W. D. Wilson, D. D., LL. D., of the Cornell University.

[Reprinted from the Proceedings.]

The relation of labor to capital is one of the great problems of the age—of all ages. In the lowest stages of human society, capital does not exist. The labor, such as it is, is performed by each one, man and woman alike, for himself or for herself. But soon, at a stage above, this ceases. The strongest party shirk the work, devolving it on the women, and take to themselves the more lordly occupations of war and hunting. At the next stage we find the institution of slavery, and a servile class, without rights, without so much as the ownership of themselves, doomed to do the work, while the masters live at ease, and enjoy themselves on the proceeds of the labor.

But as society advances, slavery is found to be both inhuman and uneconomical, and antislavery sentiment

arises. But, without this, it is much preferable in many respects that the master should cease to be a master and man-owner, and become only the capitalist, dealing with those who do the work, not as slaves, but rather as equals, laborers employed by contract and consent. And we have now society divided into capitalists and laborers—both free, both equal before the law—but very unequal in respect to culture, social position, and the means and opportunities for enjoyment. And even this state of society, which is usually regarded as civilization, as the two preceding stages have been respectively regarded as savagery and barbarism, tends and looks forward to another in which all shall be capitalists, and all be laborers; every man shall work for the living he has, and every one shall own the capital he needs wherewith to do his work; and culture will be universal, if not equal. Means and leisure for all reasonable enjoyment will be within the reach of all; and moral purity, a high state of integrity, and a benevolent regard by all persons for the welfare of all others will be the prevailing sentiment. Shall we call this the Christian stage—the millennium—the divine ideal fully realized?

Doubtless our blessed Lord saw these great problems, as he saw all others that have oppressed and embarrassed humanity. But in this, as in all other things, he gave no scientific or philosophic solution. He came not to teach a philosophy, but a religion. Not, as has been quaintly said, to teach us how the heavens go, but how we may go to heaven. Instead of solving the problem for the intellects of his disciples, he solved it practically for all those who, adhering to his method, would believe in order to know, and obey in order to understand.

There are two precepts of Christianity which seem to me likely to work out a solution of this problem.

When the Forerunner of our Lord said to the soldiers who had inquired of him what they should do, "Be content with your wages," he uttered a precept which, I think, we may take to be universal in its character, and applicable alike in all time for those who work for wages. This, then, is the first of the two precepts to which I have referred.

And for the second, I turn to St. Paul, whom I take to have been uttering the mind of his divine Master, his Lord and ours, when he said, "We beseech you, brethren, that ye study to be quiet, and to do your own business, and to work with your own hands, as we commanded you. (1st Thessalonians, 4:10, 11.) There may, indeed, arise some doubt whether this is to be taken as a general or universal precept, when we consider the fact that most of the early Christians were poor people, belonging to the laboring classes, as they are called. But when we call to mind the many things that are said in the Bible about the danger of rich men trusting in their riches, and the impossibility of those who do so entering into the kingdom of heaven, and the many warnings and the denunciations against oppressing the hireling in his wages, I think we shall be reconciled to regarding it as the inculcation of a universal precept of Christianity.

Now, I am aware that here is no attempt to determine the amount of wages which the poor should receive or the rich ought to give. I use the words rich and poor as well as capitalist and laborer; for in the popular sense of the words, and in the discussions of science on this sub-

ject, the laborers are the poor and the poor are the laborers; while for all practical purposes, the rich and the capitalists are one and the same class. I say, then, our Lord makes no attempt to determine the amount of wages that should be given. He recognizes the fact that there are two classes. He doubtless knew, though he did not expressly admit, that the wages of the poor, or the laborers, as modern science prefers to call them, are often grossly and most unjustly inadequate. But he was no agitator. He was no violent revolutionist. He did not even state all the elements of the problem. He told, as was his manner of teaching, what we should do, not what we should say. To the poor he said, "Be content with your wages," and to the rich, "Work with your own hands."

This, you may say, was no solution of the problem. And so it was not. But herein is illustrated the contrast between our Lord's method of dealing with the great problems of humanity, and that of the modern men of science, who look to themselves and their own vision rather than to God for their wisdom. Our Lord told men what to do; informed them that knowledge and wisdom—the solution of problems, nay, the comprehension of mysteries—would come in time, as the result of faith working by love. It would come as a result. Modern scientists would, on the other hand, stand and wait, and teach their followers to wait, until the problem is solved and the mystery comprehended, before they begin to work, before they take the first step toward doing what lies before them.

And history justifies his method. I have not time to

illustrate; but all the ages from that day to this are a proof and illustration of the many problems in philosophy and science which have been solved in his way. All the fundamental principles of modern life and civilization have been reached by his method. The Greeks, who pursued the other method, speculated and philosophized, and did everything but believe and obey, and yet they solved none of these great problems. Faith and obedience brought the solutions; and so it will ever be. Political economists have labored long and faithfully—though faithlessly—to determine how much the laborer ought to receive, and how much the capitalist ought to give. But this has hitherto been in vain, and it must be forever in vain if they adopt no other method than the one they have been accustomed to pursue. They may stand, and wait, and speculate forever, but no solution will come in their way. Meanwhile the evil thickens upon them; the atmosphere is dark with the coming storm; its winds howl and its thunders roar, but they cry in vain for some one to show them any good. Our Lord's solution they will not accept. One of their own they cannot hope to find.

But let us preach the Gospel. To the poor say, with our Lord, "Be content with your wages;" work for what you can get, but work: go to work now; work always and constantly; accept what you can get; deserve more, and in the Lord's good time you will get more if you deserve it. Doubtless your wages, in some cases at least, are not what they ought to be. But you know, as Christians—if not, it is our pleasure and privilege to teach you—that what you suffer here from the injustice of others

will turn to your account hereafter. Be quiet. Whatsoever your hands find to do, do it, and be content with your wages. God will take care of the rest." To the rich we should say, "Study to be quiet, to do your own business, and work with your own hands." The former precept—that addressed to the poor—has been proclaimed and applauded with hurrahs and amens until the world is sick of hearing it. Its echo, which meets us everywhere, has too much the tone of self-interest and grasping greed to be altogether pleasing to humane ears. The latter—the message to the rich—I fear, is seldom heard anywhere in these days. The prevalent doctrine seems to be that, if a man is able to live without work of any kind, he may do so, and be none the worse Christian for his idleness and self-indulgence.

In reference to the purely secular aspect of the problem, however, it may be well enough for us to say that while science has not yet determined, and never can determine precisely, how much of the income of the combined influence of capital and labor should be given to the laborer in order that justice may be done, it does treat of, and has taught us one important element of the solution, which, however, is like the Lord's, a practical precept—a direction for action, and not a theoretical solution that gives a precise result.

What science has done for us is to teach us that in our country where the laborers are all free, and are, moreover, the equals, both civilly and politically, with the rich, we are to leave the matter to free competition, under the law of supply and demand, and the result will work itself out. It will come by work and not philosophy, by doing what


is before us rather, and not by any *à priori* speculations on assumed premises. In other countries, it may be otherwise; but here the laborers are the equals of the employers. They are duly impressed with the dignity and importance of that equality, and they have sufficient self-assertion and independence to demand all they can get. They can hire capital if they cannot get the wages they demand for their labor, and the path is open for them, as they well know to the greatest wealth, the highest offices, and the most coveted social positions. They cannot be oppressed here. The ballot is their defense against all evils that come from that source. The rate of wages can not long be kept below what is fair and just as between the laborer and capitalist, if it is now or ever has been below that point. In this way experience will work out the result. Science accepts our Lord's method, and says to both parties, Go to work with things as they are; and science adds something which he did not, with regard to the way in which the method is to work out the solution, and confirms the assurance he gave that it will come.

But no solution can come in the speculative or *à priori* way. It sets the parties to work in the wrong spirit; or rather it recognizes as right their aims and positions while there is an element that is radically wrong in them. The poor are seeking how much they may demand with the prospect of getting it, and trying to get as much as they can for the work they do. And the rich are seeking to give as little as they can for the amount of work they need to have done. And the secular efforts to solve the problem go upon the assumption or admission that this is right. But if there is any one thing that the Gospel

teaches with more plainness and emphasis than another—a doctrine which is confirmed by all the experience of life and all the teachings of history—it is that in all cases of doubt and uncertainty, it is better to err, if err we must, on the side of generosity than on that of selfishness; on the side of self-denial rather than on that of self-indulgence. It is better, if either must be, that we suffer wrong than do wrong, to even the humblest and poorest of God's creatures. Let men see and accept this fundamental truth, and they will find no difficulty in accepting and being satisfied with Christ's method of solving the question of capital and labor. I have no doubt this solution of the problem will be unwelcome to the rich. But let us consider their case a little more in detail.

In the first place, let us say emphatically that there is nothing wrong or sinful in the mere fact of one's being rich. Neither the laws of man nor the laws of God set any limits to the amount of wealth one may honestly possess, so far as I know or believe. If one has come honestly by what he has, he may be honest in the possession of it. There may have been dishonesty in the acquisition of it; there may be wrong and sin in the use that is made of it; but there is not, necessarily, any wrong or sin in the act of ownership or possession.

In the second place, we must define exactly what we mean by work or labor. Labor does not always imply the use of hands or feet. It is not always, nor all of it, occupied with the manual operations so often called work. Work may be of the mind as well as the body. And I would define work to be any occupation of mind or body or both, which is undertaken for the creation of value, or



for the promotion of human good. But in order to be work it must imply thought and direction. It implies self-denial and self-control, and it must be carried to the point, sometimes at least, of weariness and of fatigue. It must sometimes bring the sweat of the brow, the weary heart, and the aching limbs. Nothing short of this can answer the meaning of the word labor, as used in our discussion of the problem. It must be exertion for a purpose, and it should be undertaken with a conscious desire of promoting and advancing the welfare of others as well as our own. Doubtless there is much of the exertion that is made by the rich, which they call labor—which, at all events, fatigues and worries and exhausts them—that does not come under this definition. Much of what they do by way of taking care of what they have, and most of what they do by way of devising and executing plans for enjoying it, must, I fear, fail to be passed to their credit as work or labor performed in accordance with our Lord's requirement, as stated by St. Paul. Labor, in the Christian view of it, must be exertion for the good of others, for something that increases the grand aggregate of means to supply human wants; something that alleviates human suffering, that educates, or helps to educate the ignorant; to instruct and convert the erring and perverse; something that does good to men and promotes the glory of God. Nothing less than this is the labor we speak of.

But there is nothing contrary to God's law in a man's being rich. But there is much that is contrary to his law in the way in which rich men, for the most part, live. This may be shown in many ways.

All wealth is created by labor, and is limited in quantity. Objects in nature have, indeed, some intrinsic value or capacity to satisfy human wants. But most of them are useless as they are, and derive much of their intrinsic and all of their exchangeable value from human labor. It is labor that gives them their value and makes them wealth. Now, the man, whether rich or poor, who lives without labor, is all the while consuming the products of labor without doing anything to create them. No matter how rich he is, he is living upon other people, consuming what has cost them the sweat of the brow and the weariness of the heart, the product of exertions he does not make. Living would be easier for other men, or they would have something more to enjoy in life, if he would take hold and do a part of what needs to be done, and bear a share of the burdens that must be borne by somebody, instead of leaving them all, or as much of them as he can, to others.

Again, it is an obvious fact everywhere, that not the sons and daughters of the wealthy are the most enterprising, the most efficient for good, or the most useful members of society. If the community were made up of them alone, sad indeed would be its case. The very idea that prevails in their childhood's home, that they have enough to live upon, and that, since they have enough they may live without labor, enervates them. They are apt to be as little given to self-control as to self-exertion. Law, and order, and right, and duty are less cared for than ease and mere æsthetic enjoyment. Hence, novels are preferred to science, fiction to fact, and every kind of sentimentalism takes the place of moral earnest-

ness—ritualism takes the place of religion, and we find either a vague pantheistic mysticism, or a still more vague and senseless rationalism, according to the temperament of the individual, instead of that substantial faith in realities unseen which nerves the souls of men and women for great deeds, for endurance, and for martyrdom.

But again, the rich, as such, are a short-lived race. I believe it was the great Niebuhr that first called attention to this fact, and all the more recent investigations have confirmed this statement. It can best, perhaps, be expressed in some such way as the following: The rich families—the capitalists who can live without labor—in a community, consist to-day, we will say, of so many thousands. Doubtless they are, in the aggregate, more in number than they were fifty years ago, and they will be more fifty years hence than they are now. But this increase comes entirely from accessions from without. It is not a development from within. New men and new families rise up to join their rank and be counted in the number of the rich. But if we take note of those who are regarded as the rich people or the rich families to-day, it is morally certain that their descendants will be less numerous in the next generation than they are themselves now. The succeeding generation will witness a still further diminution, and so on, until in a few generations scarcely any of them will remain. Their name and their posterity are clean cut off from the earth. Infertility, shrinking from the pains and the perils of childbirth and child-rearing, inefficiency, nervous diseases leading to debility of body and mind, announce the coming doom of family extinction. Such is the fact.

Such is God's way of proclaiming in the life of man, in the destiny of families, and in the history of nations, his law that "if any will not work, neither should he eat."

Of course there are exceptions to this rule, but they are comparatively few. And I think it will be found that all the exceptions, and the only exceptions, are really no exceptions at all. They are those, who, although rich and powerful, do nevertheless work and labor in the cause of humanity. For it is not wealth but laziness that eats out the manhood of humanity. It is not the possession of much riches, but the indolence and self-indulgence for which wealth furnishes the opportunity and the means, that brings into families the invincible leprosy of decay.

If we look into the history of some of the great families whose lineage has lasted long and occupied a conspicuous place in the pages of history, we shall see abundant reason to believe that the cares, anxieties and labors of their respective stations do as effectually exclude all thought of ease, idleness, or the indulgence of effeminate luxuries, as the stern necessities of labor and poverty drive these pests of humanity from the dwellings of the humble poor.

Thus God in his word and in his work calls us to labor—to labor with the hand or with the head, either or both, according to the endowment he has given us. Let men, and women too, realize this great law, and set themselves to do the duty to which it points, and the problem of the relation of capital and labor is resolved, or rather disappears. The honest poor do not pine or complain because they are poor. It is rather because that, while there is enough and to spare in the world, and within the

very sight of their eyes, they and their families have not the means of culture and education, of social enjoyment and religious worship. And they complain of the rich, not because they are rich, but rather because they consume their riches on their lusts, in idleness, self-indulgence, and are a fraud and cheat—as they, from their point of view, are apt to regard them—a fraud and a cheat upon humanity. But let the rich recognize the Christian doctrine of self-denial, and the sacred obligation to labor—an obligation binding equally, though perhaps for different reasons, upon all, whether rich or poor—and show themselves, as Christians ought, to be more ready to sacrifice than to indulge themselves, and live for the good of men and the glory of God, and envy and jealousies on the part of the poor will disappear.

I believe the greatest, most fundamental, and the most pernicious error of our age is the doctrine that persons, if they are only able to live without work, may do so. In my view, the materialism of scientific men, the rationalism of compromisers, nay, the doctrine of the Immaculate Conception, and of the Papal infallibility itself, are harmless in comparison with this great, wide-spread, and deeply rooted error. They may be refuted by reasoning; they are all repugnant to the instincts of the human heart in all the hours of its most intense earnestness; but this takes from the heart all instincts, but the one it creates and fosters.

I think, then, we may clearly infer and confidently teach mankind, that God has clearly foretold, has taught the way to, and in his providence, is working to usher in, that brighter age of humanity—that stage which, accord-

ing to our enunciation at the beginning of this essay, is forthcoming—when all shall be capitalists, and all shall be laborers; none shall have enough to feel at liberty to live without labor, and no honest laborer shall be so poor that he shall need to be ignorant, boorish, unrefined, and unchristianized. Men will not, of course, be equal in intellect, in station, or in wealth; but they will be equal in the common lot of humanity, its sin and fall, its redemption and restoration, the labor that secures the one and the sorrows that are inseparable from the other. And when we all shall feel that to serve God and glorify the name of the Redeemer is more than all else, is so important that all other distinctions and all other considerations sink in comparison into utter insignificance, the great problem of capital and labor will have been solved to the satisfaction of all parties, and not, I fear, before that time.

I have written earnestly upon this subject, and I have used strong language. I have done it intentionally and designedly, for I believe that, next after the Atonement made on Calvary, to work, and the necessity for it—not works—is the most efficient means of human welfare, whether we regard the condition of the body in this world or the salvation of the soul in the next.*

* It formed no part of the subject assigned me to consider the relation of the rich to the poor who cannot work. Although we have them always with us, and are commanded to work that we may have something to give them, my subject related rather to those who are not in a condition to need charity.

INDEX.

- Agriculturists, 58.
 - their function, 59.
 - their number increased by advancing civilization, 132.
- Banking, the process described, 265.
 - specie as a basis, 272.
 - compared with other business, 286.
- Banks, 259.
 - as places of deposit, 260.
 - of exchange, 260.
 - save labor, 261.
 - for discount, 262.
 - for issue of paper currency, 263.
 - their resources, 267.
- Barter, 183.
- Capital, 110.
 - represents labor, 111.
 - effects of an increase of, 111.
 - unproductive, 138.
- Capitalists, 145.
 - their necessity, 146.
- Carey, H. C. on the measure of exchangeable value, 38.
 - on importations, 223.
 - theory of population, 306.
- Centres, commercial, 196.
 - great wealth of, 213.
- Circulation of banks, how limited, 278.
 - ratio of to specie, 281.
 - the amount, how determined, 285.
- cannot be increased by Governments, 297.
- Civilization, origin and progress of, 107.
 - elevates man, 108.
 - numbers necessary to, 109.
 - higher, the greater the number, 325, 336, 337, 340.
- Coin, 252.
 - why no more made, 293.
- Coinage, the effect of, 252.
- Clearing Houses, 261.
- Commercial centres, 196.
 - their effect, 197.
 - how determined, 198.
 - effect on prices, 198.
 - rise of new, 200.
 - great wealth of, 213.
- Consumers, 57.
- Consumption, 19.
 - relation to value, 52.
 - productive and unproductive, 57.
- Competition, effects of on price, 151.
- Copyrights, in relation to free trade, 217.
 - grounds on which they are justified, 218.
- Cost, defined, 31.
 - saved by division of labor, 125.
 - reduced to three elements, 188.
 - of exchange, 193.
 - who pays it, 194.
- Currency, 263.
 - benefits of, 264.

- Death-rate in relation to density of population, 314.
 Demand—see supply.
 Density of population gives new value to articles, 131.
 effects of increasing, 324, 336, 340.
 Deposits, 259.
 loan of, 268.
 nature of, 271.
 Discounts, 223.
 ratio to specie, 275.
 Distribution, 19.
 between capital and labor, 161.
 between rent and wages, 174.
 Distributive wealth, 53.
 effect on man's welfare, 302.
 Division of labor, 117.
 effects of, 118.
 limits to, 122.
 saves cost, 125.
 stimulates production, 130.

 Economy, meaning of the word, 18.
 Exchange, 19.
 necessary to civilization, 183.
 basis of, 187.
 how determined, 189.
 gain by, 189.
 how affected by price, 191.
 benefits of, 192.
 cost of, 193.
 how distributed between consumer and producer, 202.
 determined by thrift, 206.
 proximate benefits of, 209.
 banks as means of, 260.
 Exchangeable value, 37.
 the product of labor, 38.
 measure of, 39.
 elements of, 101.

 Facts, how proved, 20.
 their relation to law, 21.
 Forces of Nature, 79.
 gratuitous, 80.
 inexhaustible, 81.
 extent of their usefulness, 82.
 effect on prices, 84.

 Free labor and free trade, 215.
 governments not satisfied with, 216.
 Free trade, 215.
 governments opposed to, 216.
 effects on national independence, 230.
 on diversification of industry, 231.
 on wages, 232.
 classes of persons who favor, 242.

 Gold and silver, their value how determined, 249.
 why used for coin, 251.
 effects of increase of on price, 253.
 market value determines their coin value, 257.
 why no more coined, 293.
 premium on, how determined, 299.
 Governments do not favor free trade, 216.
 their control of the currency, how limited, 290.

 Habit, effect on prices, 155.

 Inconvertible paper, effect of, 294.
 why below par, 298.
 Individuals, different from nations in relation to wealth, 54.
 Insurance, its relation to price, 102.
 Interest, 170.
 decreases with increase of capital, 171.
 decreases with increasing density of population, 318.
 Intrinsic value, 32.
 for different purposes, 33.
 for different persons, 34.
 different uses, 35.
 measure of, 36.
 increased by labor, 40.
 Inventions, their relation to wealth, 71.

- Labor**, creates exchangeable value, 38.
 increases intrinsic value, 40.
 the only thing we pay for, 100.
 division of, 117.
 wages of, 159, 162.
 skilled, 163.
 controls all things, 179.
 in the cost of each article, 188.
 the standard of value, 253.
- Laborers**, 57.
 their necessity to capitalists, 146.
- Land**, a tool and a force, 89.
 value of, how determined, 93.
 limit to the supply of, 95.
 rises in value with cultivation, 97.
 new intrinsic values by density of population, 98.
- List's doctrine of national economy**, 229.
- Loans and discounts**, 223.
 ratio to specie, 275.
- Machinery**, 78.
 effect on price, 85.
- Malthus' theory of population**, 305.
- Man's position in Nature**, 84.
- Manufacture at the place of production**, 211.
 special facilities for, 212.
- Manufacturers**, 58.
 their function, 59.
 relation to exchangeable value, 60.
 limits to, 61.
 relation to distributive wealth, 62.
- Metals**, the precious, why used for money, 251.
- Mill, John Stuart**, his view of value, 43.
 of rent, 99.
 the basis of exchange, 187.
 advocates protection, 240.
- Money**, its use, 247.
 theories of, 248.
 how far a standard of value, 253.
- Money**, how it enriches, 257.
 how differs from other commodities, 282.
 how it gets into circulation, 296.
 limit to the amount of, 297.
- Monopolies**, 217.
 caused by protection, 218.
- Nations differ from individuals in relation to wealth**, 54.
- Over-issue by banks**, effects of, 281.
- Over-population**, Malthus' view, 305.
 Carey's, 306.
 how far possible, 315, 341.
- Paper currency**, uses of, 264.
 how much needed, 287.
 effects of inconvertible, 294.
- Patent rights**, their relation to freedom of trade, 217.
- Political economy defined**, 17.
 importance to a nation, 18.
 subdivisions, 19.
 how far a science of facts, 20.
 deals with variables, 22.
 not settled in regard to its fundamental principles, 23.
 practical value of, 26.
- Population referred to three classes**, 72.
 effects on division of labor, 121.
 gives new value to commodities, 131.
 Malthus' theory of, 305.
 Carey's, 306.
 rate of increase, 309.
 limits to, 311.
 rate of increase in relation to wealth, 317.
- Poverty of man no fault of Nature**, 332.
- Premium on coin**, how caused, 299.
- Price distinguished from value**, 42.

- Price determined by value, 45.
 formula for, 46.
 illustration, 49.
 reduction of, 76.
 limits to reduction, 77.
 affected by the use of machinery, 85.
 of land, 96.
 affected by taxes and insurance, 102.
 decreases with advancing civilization, 103.
 affected by supply and demand, 149.
 by competition, 150.
 by force of habit, 155.
 as affecting exchange, 191.
 affected by commercial centres, 198.
 determined by what is sold, 203.
 affected by increase of gold and silver, 253.
 affected by banks, 278.
- Producers, 57.
 of different kinds, 58.
- Production, 19.
 elements of its cost, 88.
 special facilities for, 212.
- Profit, 147.
 English use of the word, 143.
- Protection, (by tariff) what, 226.
 how far possible, 227.
 List's doctrine, 229.
 relation to national independence, 230.
 to the diversification of industry, 231.
 effects on wages, 231.
 on the higher manufactures, 236.
 British doctrine and practice, 239.
 classes of persons who will oppose it, 242.
- Redemption of paper, necessity for, 273.
 amount of specie needed for, 281.
- Rent, 147.
 Ricardo's theory of, 91.
 English use of the word, 142.
 different rates of, 169.
 relation to interest, 170.
 to supply and demand, 174.
 equality with wages, 177.
 Ricardo, his theory of rent, 91.
- Savagery, an education downwards, 107.
 how caused by over-population, 302.
- Silver, used for coin, 249.
- Skill, effect on labor and wages, 163.
- Specie, as a basis of banking, 272.
 ratio to loans and discounts, 275.
 in the United States, 280.
 how much made, 289.
- Suffrage, universal, effects of, 334.
- Supply and demand, affecting price, 46.
 modifications of the law, 47.
 illustration, 49.
 of land, limited, 95.
 law of, 149.
 will produce a supply, 156.
 will distribute laborers, 156.
 will regulate wages, 157.
 and rent, 174.
- Tariff, 221.
 for revenue, 222.
 effect on importations, 223.
 for protection, 226.
- Taxes, their relation to cost, 102.
- Time, a factor of wages, 159.
 of rent, 160.
- Tools, 78.
 their relation to the forces of nature, 79.
 result of labor, 184.
 their value, 185.
 reappear, 186.
- Trade, how it enriches, 258.
- Traders, 58.
 their function, 64.
 relation to intrinsic value, 65.

- Traders, ways in which they increase aggregate wealth, 65.
 limits to their usefulness, 63.
 stand between producers and consumers, 247.
- Transportation, cost of, 193.
 limit to exchange, 196.
 on what it depends, 195.
 by whom borne, 202.
- Usury laws, opposed to freedom of trade, 218.
 grounds on which advocated, 219.
- Value, 32.
 intrinsic, 33.
 exchangeable, 37.
 in relation to consumption, 52.
 increased by density of population, 98.
 affected by tools, 185.
 relation of money to, 253.
 gold and silver for coin, 257.
- Wages, 147.
 English sense of the word, 142.
 affected by skill, 163.
 by desirableness of occupation, 165.
 by supply and demand, 167.
 in what sense equal, 168.
 equality with rent, 177.
- Wants, different kinds to be satisfied, 41, 56.
- Waste, in relation to increasing wealth, 135.
- Wealth, the word used in two senses, 17.
 two factors of, 51.
 distributive and aggregate, 53.
 affected by density of population, 115.
 the product of three forces, 142.
 distribution of, affected by trade, 258.

CATALOGUE
OF
PRACTICAL AND SCIENTIFIC BOOKS

PUBLISHED BY

HENRY CAREY BAIRD & CO.,

INDUSTRIAL PUBLISHERS, BOOKSELLERS AND IMPORTERS,

810 WALNUT STREET,
PHILADELPHIA.

☞ Any of the Books comprised in this Catalogue will be sent free of postage at the printed prices to any address in the World.

☞ A Descriptive Catalogue, 96 pages, 8vo., and our other Catalogues, the whole covering all of the branches of Science Applied to the Arts, sent free and free of postage to any one in any part of the world, who will furnish us with his address.

☞ Where not otherwise stated, all of the Books in this Catalogue are bound in muslin.

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

2. The second part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".

CATALOGUE
OF
Practical and Scientific Books
PUBLISHED BY
HENRY CAREY BAIRD & Co.
INDUSTRIAL PUBLISHERS, BOOKSELLERS AND IMPORTERS,
810 Walnut Street, Philadelphia.

- Any of the Books comprised in this Catalogue will be sent by mail, free of postage, to any address in the world, at the publication prices.
- A Descriptive Catalogue, 96 pages, 8vo., will be sent free and free of postage, to any one in any part of the world, who will furnish his address.
- Where not otherwise stated, all of the Books in this Catalogue are bound in muslin.

AMATEUR MECHANICS' WORKSHOP:

A treatise containing plain and concise directions for the manipulation of Wood and Metals, including Casting, Forging, Brazing, Soldering and Carpentry. By the author of the "Lathe and Its Uses." Third edition. Illustrated. 8vo. . . . \$3.00

ANDRES.—A Practical Treatise on the Fabrication of Volatile and Fat Varnishes, Lacquers, Siccatives and Sealing Waxes.

From the German of ERWIN ANDRES, Manufacturer of Varnishes and Lacquers. With additions on the Manufacture and Application of Varnishes, Stains for Wood, Horn, Ivory, Bone and Leather. From the German of DR. EMIL WINCKLER and LOUIS E. ANDES. The whole translated and edited by WILLIAM T. BRANNT. With 11 illustrations. 12mo. . . . \$2.50

ARLOT.—A Complete Guide for Coach Painters:

Translated from the French of M. ARLOT, Coach Painter; for eleven years Foreman of Painting to M. Eherler, Coach Maker, Paris. By A. A. FESQUET, Chemist and Engineer. To which is added an Appendix, containing Information respecting the Materials and the Practice of Coach and Car Painting and Varnishing in the United States and Great Britain. 12mo. . . . \$1.25

ARMENGAUD, AMOROUX, AND JOHNSON.—The Practical Draughtsman's Book of Industrial Design, and Machinist's and Engineer's Drawing Companion:

Forming a Complete Course of Mechanical Engineering and Architectural Drawing. From the French of M. Armengaud the elder, Prof. of Design in the Conservatoire of Arts and Industry, Paris, and MM. Armengaud the younger, and Amoroux, Civil Engineers. Rewritten and arranged with additional matter and plates, selections from and examples of the most useful and generally employed mechanism of the day. By WILLIAM JOHNSON, Assoc. Inst. C. E. Illustrated by fifty folio steel plates, and fifty wood-cuts. A new edition, 4to., half morocco \$10.00

ARMSTRONG.—The Construction and Management of Steam Boilers:

By R. ARMSTRONG, C. E. With an Appendix by ROBERT MALLET, C. E., F. R. S. Seventh Edition. Illustrated. 1 vol. 12mo. 75

ARROWSMITH.—Paper-Hanger's Companion:

A Treatise in which the Practical Operations of the Trade are Systematically laid down: with Copious Directions Preparatory to Papering; Preventives against the Effect of Damp on Walls; the various Cements and Pastes Adapted to the Several Purposes of the Trade; Observations and Directions for the Panelling and Ornamenting of Rooms, etc. By JAMES ARROWSMITH. 12mo., cloth \$1.25

ASHTON.—The Theory and Practice of the Art of Designing Fancy Cotton and Woollen Cloths from Sample:

Giving full instructions for reducing drafts, as well as the methods of spooling and making out harness for cross drafts and finding any required reed; with calculations and tables of yarn. By FREDERIC T. ASHTON, Designer, West Pittsfield, Mass. With fifty-two illustrations. One vol. folio \$10.00

AUERBACH—CROOKES.—Anthracen:

Its Constitution, Properties, Manufacture and Derivatives, including Artificial Alizarin, Anthrapurpurin, etc., with their applications in Dyeing and Printing. By G. AUERBACH. Translated and edited from the revised manuscript of the Author, by WM. CROOKES, F. R. S., Vice-President of the Chemical Society. 8vo. \$5.00

BAIRD.—Miscellaneous Papers on Economic Questions. By Henry Carey Baird. (*In preparation.*)

BAIRD.—The American Cotton Spinner, and Manager's and Carder's Guide:

A Practical Treatise on Cotton Spinning; giving the Dimensions and Speed of Machinery, Draught and Twist Calculations, etc.; with notices of recent Improvements: together with Rules and Examples for making changes in the sizes and numbers of Roving and Yarn. Compiled from the papers of the late ROBERT H. BAIRD. 12mo. \$1.50

BAIRD.—Standard Wages Computing Tables :

An Improvement in all former Methods of Computation, so arranged that wages for days, hours, or fractions of hours, at a specified rate per day or hour, may be ascertained at a glance. By T. SPANGLER BAIRD. Oblong folio \$5.00

BAKER.—Long-Span Railway Bridges :

Comprising Investigations of the Comparative Theoretical and Practical Advantages of the various Adopted or Proposed Type Systems of Construction; with numerous Formulæ and Tables. By B. BAKER. 12mo. \$1.50

BAKER.—The Mathematical Theory of the Steam-Engine :

With Rules at length, and Examples worked out for the use of Practical Men. By T. BAKER, C. E., with numerous Diagrams. Sixth Edition, Revised by Prof. J. R. YOUNG. 12mo. 75

BARLOW.—The History and Principles of Weaving, by Hand and by Power :

Reprinted, with Considerable Additions, from "Engineering," with a chapter on Lace-making Machinery, reprinted from the Journal of the "Society of Arts." By ALFRED BARLOW. With several hundred illustrations. 8vo., 443 pages \$10.00

BARR.—A Practical Treatise on the Combustion of Coal :

Including descriptions of various mechanical devices for the Economic Generation of Heat by the Combustion of Fuel, whether solid, liquid or gaseous. 8vo. \$2.50

BARR.—A Practical Treatise on High Pressure Steam Boilers :

Including Results of Recent Experimental Tests of Boiler Materials, together with a Description of Approved Safety Apparatus, Steam Pumps, Injectors and Economizers in actual use. By WM. M. BARR. 204 Illustrations. 8vo. \$3.00

BAUERMAN.—A Treatise on the Metallurgy of Iron :

Containing Outlines of the History of Iron Manufacture, Methods of Assay, and Analysis of Iron Ores, Processes of Manufacture of Iron and Steel, etc., etc. By H. BAUERMAN, F. G. S., Associate of the Royal School of Mines. Fifth Edition, Revised and Enlarged. Illustrated with numerous Wood Engravings from Drawings by J. B. JORDAN. 12mo. \$2.00

BAYLES.—House Drainage and Water Service :

In Cities, Villages and Rural Neighborhoods. With Incidental Consideration of Certain Causes Affecting the Healthfulness of Dwellings. By JAMES C. BAYLES, Editor of "The Iron Age" and "The Metal Worker." With numerous illustrations. 8vo. cloth, \$3.00

BEANS.—A Treatise on Railway Curves and Location of Railroads :

By E. W. BEANS, C. E. Illustrated. 12mo. Tucks \$1.50

BECKETT.—A Rudimentary Treatise on Clocks, and Watches and Bells :

By Sir EDMUND BECKETT, Bart., LL. D., Q. C. F. R. A. S. With numerous illustrations. Seventh Edition, Revised and Enlarged. 12mo. \$2.25

BELL.—Carpentry Made Easy:

OR, The Science and Art of Framing on a New and Improved System. With Specific Instructions for Building Balloon Frames, Barn Frames, Mill Frames, Warehouses, Church Spires, etc. Comprising also a System of Bridge Building, with Bills, Estimates of Cost, and valuable Tables. Illustrated by forty-four plates, comprising nearly 200 figures. By WILLIAM E. BELL, Architect and Practical Builder. 8vo. \$5.00

BEMROSE.—Fret-Cutting and Perforated Carving:

With fifty-three practical illustrations. By W. BEMROSE, JR. 1 vol. quarto \$3.00

BEMROSE.—Manual of Buhl-work and Marquetry:

With Practical Instructions for Learners, and ninety colored designs. By W. BEMROSE, JR. 1 vol. quarto \$3.00

BEMROSE.—Manual of Wood Carving:

With Practical Illustrations for Learners of the Art, and Original and Selected Designs. By WILLIAM BEMROSE, JR. With an Introduction by LLEWELLYN JEWITT, F. S. A., etc. With 128 illustrations, 4to. \$3.00

BILLINGS.—Tobacco:

Its History, Variety, Culture, Manufacture, Commerce, and Various Modes of Use. By E. R. BILLINGS. Illustrated by nearly 200 engravings. 8vo. \$3.00

BIRD.—The American Practical Dyers' Companion:

Comprising a Description of the Principal Dye-Stuffs and Chemicals used in Dyeing, their Natures and Uses; Mordants, and How Made; with the best American, English, French and German processes for Bleaching and Dyeing Silk, Wool, Cotton, Linen, Flannel, Felt, Dress Goods, Mixed and Hosiery Yarns, Feathers, Grass, Felt, Fur, Wool, and Straw Hats, Jute Yarn, Vegetable Ivory, Mats, Skins, Furs, Leather, etc., etc. By Wood, Aniline, and other Processes, together with Remarks on Finishing Agents, and Instructions in the Finishing of Fabrics, Substitutes for Indigo, Water-Proofing of Materials, Tests and Purification of Water, Manufacture of Aniline and other New Dye Wares, Harmonizing Colors, etc., etc.; embracing in all over 800 Receipts for Colors and Shades, accompanied by 170 Dyed Samples of Raw Materials and Fabrics. By F. J. BIRD, Practical Dyer, Author of "The Dyers' Hand-Book." 8vo. \$10.00

BLENKARN.—Practical Specifications of Works executed in Architecture, Civil and Mechanical Engineering, and in Road Making and Sewering:

To which are added a series of practically useful Agreements and Reports. By JOHN BLENKARN. Illustrated by fifteen large folding plates. 8vo. \$9.00

BLINN.—A Practical Workshop Companion for Tin, Sheet-Iron, and Copper-plate Workers:

Containing Rules for describing various kinds of Patterns used by Tin, Sheet-Iron and Copper-plate Workers; Practical Geometry;

Mensuration of Surfaces and Solids; Tables of the Weights of Metals, Lead-pipe, etc.; Tables of Areas and Circumferences of Circles; Japan, Varnishes, Lackers, Cements, Compositions, etc., etc. By LEROY J. BLINN, Master Mechanic. With over One Hundred Illustrations. 12mo. \$2.50

BOOTH.—Marble Worker's Manual:

Containing Practical Information respecting Marbles in general, their Cutting, Working and Polishing; Veneering of Marble; Mosaics; Composition and Use of Artificial Marble, Stuccos, Cements, Receipts, Secrets, etc., etc. Translated from the French by M. L. BOOTH. With an Appendix concerning American Marbles. 12mo., cloth \$1.50

BOOTH and MORFIT.—The Encyclopædia of Chemistry, Practical and Theoretical:

Embracing its application to the Arts, Metallurgy, Mineralogy, Geology, Medicine and Pharmacy. By JAMES C. BOOTH, Melter and Refiner in the United States Mint, Professor of Applied Chemistry in the Franklin Institute, etc., assisted by CAMPBELL MORFIT, author of "Chemical Manipulations," etc. Seventh Edition. Complete in one volume, royal 8vo., 978 pages, with numerous wood-cuts and other illustrations \$5.00

BRAMWELL.—The Wool Carder's Vade-Mecum:

A Complete Manual of the Art of Carding Textile Fabrics. By W. C. BRAMWELL. Third Edition, revised and enlarged. Illustrated. pp. 400. 12mo. \$2.50

BRANNT.—The Techno-Chemical Receipt Book:

Containing several thousand Receipts comprising the latest and most useful discoveries in Chemical Technology and Industry. Edited from the German of DRS. E. WINCKLER, HEINTZE and MIERZINSKI, with additions by W. T. BRANNT. (*In preparation.*)

BROWN.—Five Hundred and Seven Mechanical Movements:

Embracing all those which are most important in Dynamics, Hydraulics, Hydrostatics, Pneumatics, Steam-Engines, Mill and other Gearing, Presses, Horology and Miscellaneous Machinery; and including many movements never before published, and several of which have only recently come into use. By HENRY T. BROWN. 12mo. \$1.00

BUCKMASTER.—The Elements of Mechanical Physics:

By J. C. BUCKMASTER. Illustrated with numerous engravings. 12mo. \$1.50

BULLOCK.—The American Cottage Builder:

A Series of Designs, Plans and Specifications, from \$200 to \$20,000, for Homes for the People; together with Warming, Ventilation, Drainage, Painting and Landscape Gardening. By JOHN BULLOCK, Architect and Editor of "The Rudiments of Architecture and Building," etc., etc. Illustrated by 75 engravings. 8vo. \$3.50

BULLOCK.—The Rudiments of Architecture and Building:

For the use of Architects, Builders, Draughtsmen, Machinists, Engineers and Mechanics. Edited by JOHN BULLOCK, author of "The American Cottage Builder." Illustrated by 250 Engravings. 8vo. \$3.50

BURGH.—Practical Rules for the Proportions of Modern Engines and Boilers for Land and Marine Purposes.

By N. P. BURGH, Engineer. 12mo. . . . \$1.50

BURNS.—The American Woolen Manufacturer:

A Practical Treatise on the Manufacture of Woolens, in two parts. Part First gives full and explicit instructions upon Drafting, Cross-Drawing, Combining Weaves, and the correct arrangement of Weights, Colors and Sizes of Yarns to produce any desired fabric. Illustrated with diagrams of various weavings, and twelve samples of cloth for explanation and practice. Part Second is fully supplied with extended Tables, Rules, Examples, Explanations, etc.; gives full and practical information, in detailed order, from the stock department to the market, of the proper selection and use of the various grades and staples of wool, with the admixture of waste, cotton and shoddy; and the proper application and economical use of the various oils, drugs, dye stuffs, soaps, belting, etc. Also, the most approved method for Calculating and Estimating the Cost of Goods, for all Wool, Wool Waste and Cotton and Cotton Warps. With Examples and Calculations on the Circular motions of Wheels, Pinions, Drums, Pulleys and Gears, how to speed them, etc. The two parts combined form a whole work on the American way of manufacturing more complete than any yet issued. By GEORGE C. BURNS. 8vo. . . . \$6.50

BYLES.—Sophisms of Free Trade and Popular Political Economy Examined.

By a BARRISTER (SIR JOHN BARNARD BYLES, Judge of Common Pleas). From the Ninth English Edition, as published by the Manchester Reciprocity Association. 12mo. . . . \$1.25

BYRN.—The Complete Practical Brewer:

Or Plain, Accurate and Thorough Instructions in the Art of Brewing Beer, Ale, Porter, including the Process of Making Bavarian Beer, all the Small Beers, such as Root-beer, Ginger-pop, Sarsaparilla-beer, Mead, Spruce Beer, etc. Adapted to the use of Public Brewers and Private Families. By M. LA FAYETTE BYRN, M. D. With illustrations. 12mo. . . .

BYRN.—The Complete Practical Distiller:

Comprising the most perfect and exact Theoretical and Practical Description of the Art of Distillation and Rectification; including all of the most recent improvements in distilling apparatus; instructions for preparing spirits from the numerous vegetables, fruits, etc.; directions for the distillation and preparation of all kinds of brandies and other spirits, spirituous and other compounds, etc. By M. LA FAYETTE BYRN, M. D. Eighth Edition. To which are added Practical Directions for Distilling, from the French of Th. Fling, Brewer and Distiller. 12mo. . . . \$1.50

BYRNE.—Hand-Book for the Artisan, Mechanic, and Engineer:

Comprising the Grinding and Sharpening of Cutting Tools, Abrasive Processes, Lapidary Work, Gem and Glass Engraving, Varnishing and Lackering, Apparatus, Materials and Processes for Grinding and

Polishing, etc. By OLIVER BYRNE. Illustrated by 185 wood engravings. 8vo. \$5.00

BYRNE.—Pocket-Book for Railroad and Civil Engineers :

Containing New, Exact and Concise Methods for Laying out Railroad Curves, Switches, Frog Angles and Crossings; the Staking out of work; Levelling; the Calculation of Cuttings; Embankments; Earth-work, etc. By OLIVER BYRNE. 18mo., full bound, pocket-book form \$1.75

BYRNE.—The Practical Metal-Worker's Assistant :

Comprising Metallurgic Chemistry; the Arts of Working all Metals and Alloys; Forging of Iron and Steel; Hardening and Tempering; Melting and Mixing; Casting and Founding; Works in Sheet Metal; the Processes Dependent on the Ductility of the Metals; Soldering; and the most Improved Processes and Tools employed by Metal-Workers. With the Application of the Art of Electro-Metallurgy to Manufacturing Processes; collected from Original Sources, and from the works of Holtzapffel, Bergeron, Leupold, Plumier, Napier, Scoffern, Clay, Fairbairn and others. By OLIVER BYRNE. A new, revised and improved edition, to which is added an Appendix, containing The Manufacture of Russian Sheet-Iron. By JOHN PERCY, M. D., F. R. S. The Manufacture of Malleable Iron Castings, and Improvements in Bessemer Steel. By A. A. FESQUET, Chemist and Engineer. With over Six Hundred Engravings, illustrating every Branch of the Subject. 8vo. \$7.00

BYRNE.—The Practical Model Calculator :

For the Engineer, Mechanic, Manufacturer of Engine Work, Naval Architect, Miner and Millwright. By OLIVER BYRNE. 8vo., nearly 600 pages \$4.50

CABINET MAKER'S ALBUM OF FURNITURE :

Comprising a Collection of Designs for various Styles of Furniture. Illustrated by Forty-eight Large and Beautifully Engraved Plates. Oblong, 8vo. \$3.50

CALLINGHAM.—Sign Writing and Glass Embossing :

A Complete Practical Illustrated Manual of the Art. By JAMES CALLINGHAM. 12mo. \$1.50

CAMPIN.—A Practical Treatise on Mechanical Engineering :

Comprising Metallurgy, Moulding, Casting, Forging, Tools, Workshop Machinery, Mechanical Manipulation, Manufacture of Steam-Engines, etc. With an Appendix on the Analysis of Iron and Iron Ores. By FRANCIS CAMPIN, C. E. To which are added, Observations on the Construction of Steam Boilers, and Remarks upon Furnaces used for Smoke Prevention; with a Chapter on Explosions. By R. ARMSTRONG, C. E., and JOHN BOURNE. Rules for Calculating the Change Wheels for Screws on a Turning Lathe, and for a Wheel-cutting Machine. By J. LA NICCA. Management of Steel, Including Forging, Hardening, Tempering, Annealing, Shrinking and Expansion; and the Case-hardening of Iron. By G. EDE. 8vo. Illustrated with twenty-nine plates and 100 wood engravings \$5.00

CAREY.—A Memoir of Henry C. Carey.

By DR. WM. ELDER. With a portrait. 8vo., cloth . . . 75

CAREY.—The Works of Henry C. Carey:**Harmony of Interests:** Agricultural, Manufacturing and Commercial. 8vo. . . \$1.50**Manual of Social Science.** Condensed from Carey's "Principles of Social Science." By KATE MCKEAN. 1 vol. 12mo. . . \$2.25**Miscellaneous Works.** With a Portrait. 2 vols. 8vo. . . \$6.00**Past, Present and Future.** 8vo. . . \$2.50**Principles of Social Science.** 3 volumes, 8vo. . . \$10.00**The Slave-Trade, Domestic and Foreign; Why it Exists, and How it may be Extinguished (1853).** 8vo. . . \$2.00**The Unity of Law: As Exhibited in the Relations of Physical, Social, Mental and Moral Science (1872).** 8vo. . . \$3.50**CLARK.—Tramways, their Construction and Working:**

Embracing a Comprehensive History of the System. With an exhaustive analysis of the various modes of traction, including horse-power, steam, heated water and compressed air; a description of the varieties of Rolling stock, and ample details of cost and working expenses. By D. KINNEAR CLARK. Illustrated by over 200 wood engravings, and thirteen folding plates. 2 vols. 8vo. . . \$12.50

COLBURN.—The Locomotive Engine:

Including a Description of its Structure, Rules for Estimating its Capabilities, and Practical Observations on its Construction and Management. By ZERAH COLBURN. Illustrated. 12mo. . . \$1.00

COLLENS.—The Eden of Labor; or, the Christian Utopia.

By T. WHARTON COLLENS, author of "Humanics," "The History of Charity," etc. 12mo. Paper cover, \$1.00; Cloth . . . \$1.25

COOLEY.—A Complete Practical Treatise on Perfumery:

Being a Hand-book of Perfumes, Cosmetics and other Toilet Articles. With a Comprehensive Collection of Formulæ. By ARNOLD J. COOLEY. 12mo. . . \$1.50

COOPER.—A Treatise on the use of Belting for the Transmission of Power.

With numerous illustrations of approved and actual methods of arranging Main Driving and Quarter Twist Belts, and of Belt Fastenings. Examples and Rules in great number for exhibiting and calculating the size and driving power of Belts. Plain, Particular and Practical Directions for the Treatment, Care and Management of Belts. Descriptions of many varieties of Beltings, together with chapters on the Transmission of Power by Ropes; by Iron and Wood Frictional Gearing; on the Strength of Belting Leather; and on the Experimental Investigations of Morin, Briggs, and others. By JOHN H. COOPER, M. E. 8vo. . . \$3.50

CRAIK.—The Practical American Millwright and Miller.

By DAVID CRAIK, Millwright. Illustrated by numerous wood engravings and two folding plates. 8vo. . . \$5.00

CRISTIANI.—A Technical Treatise on Soap and Candles:

With a Glance at the Industry of Fats and Oils. By R. S. CRISTIANI, Chemist. Author of "Perfumery and Kindred Arts." Illustrated by 176 engravings. 581 pages, 8vo. . . . \$7.50

CRISTIANI.—Perfumery and Kindred Arts:

A Comprehensive Treatise on Perfumery, containing a History of Perfumes from the remotest ages to the present time. A complete detailed description of the various Materials and Apparatus used in the Perfumer's Art, with thorough Practical Instruction and careful Formulæ, and advice for the fabrication of all known preparations of the day, including Essences, Tinctures, Extracts, Spirits, Waters, Vinegars, Pomades, Powders, Paints, Oils, Emulsions, Cosmetics, Infusions, Pastilles, Tooth Powders and Washes, Cachous, Hair Dyes, Sachets, Essential Oils, Flavoring Extracts, etc.; and full details for making and manipulating Fancy Toilet Soaps, Shaving Creams, etc., by new and improved methods. With an Appendix giving hints and advice for making and fermenting Domestic Wines, Cordials, Liquors, Candies, Jellies, Syrups, Colors, etc., and for Perfuming and Flavoring Segars, Snuff and Tobacco, and Miscellaneous Receipts for various useful Analogous Articles. By R. S. CRISTIANI, Consulting Chemist and Perfumer, Philadelphia. 8vo. . . . \$5.00

CROOKES.—A Practical Hand-Book of Dyeing and Calico Printing.

By WM. CROOKES, F. R. S., etc. With eleven page plates, forty-seven specimens of Dyed and Printed Fabrics, and thirty-eight wood cuts. 730 pages, 8vo. . . . \$15.00

CROOKES.—Select Methods in Chemical Analysis (chiefly inorganic).

By WM. CROOKES, F. R. S. Illustrated with twenty-two wood cuts. 12mo., 468 pages \$5.00

CUPPER.—The Universal Stair-Builder:

Being a new Treatise on the Construction of Stair-Cases and Hand-Rails; showing Plans of the various forms of Stairs, method of Placing the Risers in the Cylinders, general method of describing the Face Moulds for a Hand-Rail, and an expeditious method of Squaring the Rail. Useful also to Stonemasons constructing Stone Stairs and Hand-Rails; with a new method of Sawing the Twist Part of any Hand-Rail square from the face of the plank, and to a parallel width. Also, a new method of forming the Easings of the Rail by a gauge; preceded by some necessary Problems in Practical Geometry, with the Sections of Prismatic Solids. Illustrated by 29 plates. By R. A. CUPPER, Architect, author of "The Practical Stair-Builder's Guide." Third Edition. Large 4to. . . . \$2.50

**DAVIDSON.—A Practical Manual of House Painting, Grain-
ing, Marbling, and Sign-Writing:**

Containing full information on the processes of House Painting in

- Oil and Distemper, the Formation of Letters and Practice of Sign-Writing, the Principles of Decorative Art, a Course of Elementary Drawing for House Painters, Writers, etc., and a Collection of Useful Receipts. With nine colored illustrations of Woods and Marbles, and numerous wood engravings. By ELLIS A. DAVIDSON. 12mo. \$3.00
- DAVIES.—A Treatise on Metalliferous Minerals and Mining:**
By D. C. DAVIES, F. G. S., Mining Engineer, Examiner of Mines, Quarries and Collieries. Illustrated by 148 engravings of Geological Formations, Mining Operations and Machinery, drawn from the practice of all parts of the world. 2d Edition, 12mo., 450 pages \$5.00
- DAVIES.—A Treatise on Slate and Slate Quarrying:**
Scientific, Practical and Commercial. By D. C. DAVIES, F. G. S., Mining Engineer, etc. With numerous illustrations and folding plates. 12mo. \$2.50
- DAWIDOWSKY—BRANNT.—A Practical Treatise on the Fabrication of Glue, Gelatine, Cements, Pastes, Mucilages, etc.:**
Comprising a Popular Description of these Industries, based upon Practical Experience. By F. DAWIDOWSKY, Technical Chemist. From the German, with additions, by WILLIAM T. BRANNT. Illustrated. 12mo. (*In preparation.*)
- DE GRAFF.—The Geometrical Stair-Builders' Guide:**
Being a Plain Practical System of Hand-Railing, embracing all its necessary Details, and Geometrically Illustrated by twenty-two Steel Engravings; together with the use of the most approved principles of Practical Geometry. By SIMON DE GRAFF, Architect. 4to. \$2.50
- DE KONINCK—DIETZ.—A Practical Manual of Chemical Analysis and Assaying:**
As applied to the Manufacture of Iron from its Ores, and to Cast Iron, Wrought Iron, and Steel, as found in Commerce. By L. L. DE KONINCK, Dr. Sc., and E. DIETZ, Engineer. Edited with Notes, by ROBERT MALLET, F. R. S., F. S. G., M. I. C. E., etc. American Edition, Edited with Notes and an Appendix on Iron Ores, by A. A. FESQUET, Chemist and Engineer. 12mo. \$2.50
- DUNCAN.—Practical Surveyor's Guide:**
Containing the necessary information to make any person of common capacity, a finished land surveyor without the aid of a teacher. By ANDREW DUNCAN. Illustrated. 12mo. \$1.25
- DUPLAIS.—A Treatise on the Manufacture and Distillation of Alcoholic Liquors:**
Comprising Accurate and Complete Details in Regard to Alcohol from Wine, Molasses, Beets, Grain, Rice, Potatoes, Sorghum, Asphodel, Fruits, etc.; with the Distillation and Rectification of Brandy, Whiskey, Rum, Gin, Swiss Absinthe, etc., the Preparation of Aromatic Waters, Volatile Oils or Essences, Sugars, Syrups, Aromatic Tinctures, Liqueurs, Cordial Wines, Effervescing Wines, etc., the

Ageing of Brandy and the improvement of Spirits, with Copious Directions and Tables for Testing and Reducing Spirituous Liquors, etc., etc. Translated and Edited from the French of MM. DUFLAIS, Aîné et Jeune. By M. McKENNIE, M. D. To which are added the United States Internal Revenue Regulations for the Assessment and Collection of Taxes on Distilled Spirits. Illustrated by fourteen folding plates and several wood engravings. 743 pp. 8vo. \$10 00

DUSSAUCE.—A General Treatise on the Manufacture of Every Description of Soap:

Comprising the Chemistry of the Art, with Remarks on Alkalies, Saponifiable Fatty Bodies, the apparatus necessary in a Soap Factory, Practical Instructions in the manufacture of the various kinds of Soap, the assay of Soaps, etc., etc. By Prof. H. DUSSAUCE, Chemist. Illustrated. 8vo. \$25 00

DUSSAUCE.—A General Treatise on the Manufacture of Vinegar:

Theoretical and Practical. Comprising the various Methods, by the Slow and the Quick Processes, with Alcohol, Wine, Grain, Malt, Cider, Molasses, and Beets; as well as the Fabrication of Wood Vinegar, etc., etc. By Prof. H. DUSSAUCE. 8vo. \$5 00

DUSSAUCE.—A New and Complete Treatise on the Arts of Tanning, Currying, and Leather Dressing:

Comprising all the Discoveries and Improvements made in France, Great Britain, and the United States. Edited from Notes and Documents of Messrs. Sallerou, Grouvelle, Duval, Dessables, Labarraque, Payen, René, De Fontenelle, Malapeyre, etc., etc. By Prof. H. DUSSAUCE, Chemist. Illustrated by 212 wood engravings. 8vo. \$25 00

DUSSAUCE.—Practical Treatise on the Fabrication of Matches, Gun Cotton, and Fulminating Powder.

By Professor H. DUSSAUCE. 12mo. \$3 00

DYER AND COLOR-MAKER'S COMPANION:

Containing upwards of two hundred Receipts for making Colors, on the most approved principles, for all the various styles and fabrics now in existence; with the Scouring Process, and plain Directions for Preparing, Washing-off, and Finishing the Goods. 12mo. \$1 25

EASTON.—A Practical Treatise on Street or Horse-Power Railways:

By ALEXANDER EASTON, C. E. Illustrated by 23 plates. 8vo. \$3 00

EDWARDS.—A Catechism of the Marine Steam-Engine,

For the use of Engineers, Firemen, and Mechanics. A Practical Work for Practical Men. By EMORY EDWARDS, Mechanical Engineer. Illustrated by sixty-three Engravings, including examples of the most modern Engines. Third edition, thoroughly revised, with much additional matter. 12mo. 414 pages \$2 00

EDWARDS.—Modern American Locomotive Engines,

Their Design, Construction and Management. By EMORY EDWARDS. Illustrated 12mo. \$2 00

EDWARDS.—Modern American Marine Engines, Boilers, and Screw Propellers,

Their Design and Construction. Showing the Present Practice of the most Eminent Engineers and Marine Engine Builders in the United States. Illustrated by 30 large and elaborate plates. 4to. \$5.00

EDWARDS.—The Practical Steam Engineer's Guide

In the Design, Construction, and Management of American Stationary, Portable, and Steam Fire-Engines, Steam Pumps, Boilers, Injectors, Governors, Indicators, Pistons and Rings, Safety Valves and Steam Gauges. For the use of Engineers, Firemen, and Steam Users. By EMORY EDWARDS. Illustrated by 119 engravings. 420 pages. 12mo. \$2 50

ELDER.—Conversations on the Principal Subjects of Political Economy.

By Dr. WILLIAM ELDER. 8vo. \$2 50

ELDER.—Questions of the Day,

Economic and Social. By Dr. WILLIAM ELDER. 8vo. \$3 00

ELDER.—Memoir of Henry C. Carey.

By Dr. WILLIAM ELDER. 8vo. cloth. 75

ERNI.—Mineralogy Simplified.

Easy Methods of Determining and Classifying Minerals, including Ores, by means of the Blowpipe, and by Humid Chemical Analysis, based on Professor von Kobell's Tables for the Determination of Minerals, with an Introduction to Modern Chemistry. By HENRY ERNI, A. M., M. D., Professor of Chemistry. Second Edition, rewritten, enlarged and improved. 12mo. (*In press.*)

FITCH.—Bessemer Steel,

Ores and Methods, New Facts and Statistics Relating to the Types of Machinery in Use, the Methods in Vogue, Cost and Class of Labor employed, and the Character and Availability of the Ores utilized in the Manufacture of Bessemer Steel in Europe and in the United States; together with opinions and excerpts from various accepted authorities. Compiled and arranged by THOMAS W. FITCH. 8vo. \$3 00

FLEMING.—Narrow Gauge Railways in America.

A Sketch of their Rise, Progress, and Success. Valuable Statistics as to Grades, Curves, Weight of Rail, Locomotives, Cars, etc. By HOWARD FLEMING. Illustrated, 8vo. \$1 50

FORSYTH.—Book of Designs for Headstones, Mural, and other Monuments:

Containing 78 Designs. By JAMES FORSYTH. With an Introduction by CHARLES BOUTELL, M. A. 4 to., cloth. \$5 00

FRANKEL—HUTTER.—A Practical Treatise on the Manufacture of Starch, Glucose, Starch-Sugar, and Dextrine:

Based on the German of LADISLAUS VON WAGNER, Professor in the Royal Technical High School, Buda-Pest, Hungary, and other authorities. By JULIUS FRANKEL, Graduate of the Polytechnic School of Hanover. Edited by ROBERT HUTTER, Chemist, Practical Manufacturer of Starch-Sugar, Proprietor of the Philadelphia Starch-

Sugar Works. Illustrated by 58 engravings, covering every branch of the subject, including examples of the most recent and best American machinery. 8vo., 344 pp. \$3.50

FRAZIER.—Modern Processes in the Metallurgy of Iron and Steel:

By B. W. FRAZIER, Professor of Mining and Metallurgy in Lehigh University, Bethlehem, Pa. Elaborately Illustrated. (*In preparation.*)

GEE.—The Practical Gold Worker:

Or, the Goldsmith's and Jeweller's Instructor in the Art of Alloying, Melting, Reducing, Coloring, Collecting, and Refining; the Processes of Manipulation, Recovery of Waste, Chemical and Physical Properties of Gold, with a New System of Mixing its Alloys, Solders, Enamels, and other Useful Rules and Recipes. By GEORGE E. GEE. 12mo. \$1.75

GEE.—The Silversmith's Handbook:

Containing full instructions for the Alloying and Working of Silver, including the different modes of Refining and Melting the Metal; its Solders; the Preparation of Imitation Alloys; Methods of Manipulation; Prevention of Waste; Instructions for Improving and Finishing the Surface of the Work; together with other Useful Information and Memoranda. By GEORGE E. GEE, Jeweller. Illustrated. 12mo. \$1.75

GOTHIC ALBUM FOR CABINET-MAKERS:

Designs for Gothic Furniture. Twenty-three plates. Oblong \$2.00

GREGORY.—Mathematics for Practical Men:

Adapted to the Pursuits of Surveyors, Architects, Mechanics, and Civil Engineers. By OLINTHUS GREGORY. 8vo., plates. \$3.00

GRIER.—Rural Hydraulics:

A Practical Treatise on Rural Household Water Supply. Giving a full description of Springs and Wells, of Pumps and Hydraulic Ram, with Instructions in Cistern Building, Laying of Pipes, etc. By W. W. GRIER. Illustrated 8vo. 75

GRIMSHAW.—Modern Milling:

Being the substance of two addresses delivered by request, at the Franklin Institute, Philadelphia, January 19th and January 27th, 1881. By ROBERT GRIMSHAW, Ph. D. Edited from the Phonographic Reports. With 28 Illustrations. 8vo. \$1.00

GRIMSHAW.—Saws:

The History, Development, Action, Classification, and Comparison of Saws of all kinds. *With Copious Appendices.* Giving the details of Manufacture, Filing, Setting, Gumming, etc. Care and Use of Saws; Tables of Gauges; Capacities of Saw-Mills; List of Saw-Patents, and other valuable information. By ROBERT GRIMSHAW. Second and greatly enlarged edition, with *Supplement*, and 354 Illustrations. Quarto \$4.00

GRIMSHAW.—A Supplement to Grimshaw on Saws:

Containing additional practical matter, more especially relating to the

- Forms of Saw-Teeth, for special material and conditions, and to the Behavior of Saws under particular conditions. 120 Illustrations. By ROBERT GRIMSHAW. Quarto \$2.00
- GRISWOLD.—Railroad Engineer's Pocket Companion for the Field:**
Comprising Rules for Calculating Deflection Distances and Angles, Tangential Distances and Angles, and all Necessary Tables for Engineers; also the Art of Levelling from Preliminary Survey to the Construction of Railroads, intended Expressly for the Young Engineer, together with Numerous Valuable Rules and Examples. By W. GRISWOLD. 12mo., tucks \$1.75
- GRUNER.—Studies of Blast Furnace Phenomena:**
By M. L. GRUNER, President of the General Council of Mines of France, and lately Professor of Metallurgy at the Ecole des Mines. Translated, with the author's sanction, with an Appendix, by L. D. B. GORDON, F. R. S. E., F. G. S. 8vo. \$2.50
- GUETTIER.—Metallic Alloys:**
Being a Practical Guide to their Chemical and Physical Properties, their Preparation, Composition, and Uses. Translated from the French of A. GUETTIER, Engineer and Director of Foundries, author of "La Fonderie en France," etc., etc. By A. A. FESQUET, Chemist and Engineer. 12mo. \$3.00
- HASERICK.—The Secrets of the Art of Dyeing Wool, Cotton, and Linen,**
Including Bleaching and Coloring Wool and Cotton Hosiery and Random Yarns. A Treatise based on Economy and Practice. By E. C. HASERICK. *Illustrated by 323 Dyed Patterns of the Yarns or Fabrics.* 8vo. \$25.00
- HATS AND FELTING:**
A Practical Treatise on their Manufacture. By a Practical Hatter. Illustrated by Drawings of Machinery, etc. 8vo. \$1.25
- HEINZERLING.—Elements of the Fabrication of Leather,**
with Special Regard to the Latest Improvements in this Branch of Industry. A Manual for Tanners, Technologists, Etc. By Dr. Christian Heinzerling. Translated from the German by William T. Brannet, Graduate of the Royal Agricultural College of Eldena, Prussia. With additions by an American Editor. Illustrated by numerous Engravings. 8vo. (*In preparation.*)
- HENRY.—The Early and Later History of Petroleum:**
With Authentic Facts in regard to its Development in Western Pennsylvania. With Sketches of the Pioneer and Prominent Operators, together with the Refining Capacity of the United States. By J. T. HENRY. Illustrated 8vo. \$4.50
- HOFFER.—A Practical Treatise on Caoutchouc and Gutta Percha,**
Comprising the Properties of the Raw Materials, and the manner of Mixing and Working them; with the Fabrication of Vulcanized and Hard Rubbers, Caoutchouc and Gutta Percha Compositions, Water-

proof Substances, Elastic Tissues, the Utilization of Waste, etc., etc.
From the German of RAIMUND HOFFER. By W. T. ERANNT.
Illustrated 12mo. \$2.50

HOFMANN.—A Practical Treatise on the Manufacture of Paper in all its Branches:

By CARL HOFMANN, Late Superintendent of Paper-Mills in Germany and the United States; recently Manager of the "Public Ledger" Paper-Mills, near Elkton, Maryland. Illustrated by 110 wood engravings, and five large Folding Plates. 4to., cloth; about 400 pages \$20.00

HUGHES.—American Miller and Millwright's Assistant:

By WILLIAM CARTER HUGHES. 12mo. \$1.50

HULME.—Worked Examination Questions in Plane Geometrical Drawing:

For the Use of Candidates for the Royal Military Academy, Woolwich; the Royal Military College, Sandhurst; the Indian Civil Engineering College, Cooper's Hill; Indian Public Works and Telegraph Departments; Royal Marine Light Infantry; the Oxford and Cambridge Local Examinations, etc. By F. EDWARD HULME, F. L. S., F. S. A., Art-Master Marlborough College. Illustrated by 300 examples. Small quarto \$3.75

HURST.—A Hand-Book for Architectural Surveyors and others Engaged in Building:

Containing Formulæ useful in Designing Builders' Work, Table of Weights, of the Materials used in Building, Memoranda connected with Builders' Work, Mensuration, the Practice of Builders' Measurement, Contracts of Labor, Valuation of Property, Summary of the Practice in Dilapidation, etc., etc. By J. F. HURST, C. E. Second edition, pocket-book form, full bound \$2.00

JERVIS.—Railroad Property:

A Treatise on the Construction and Management of Railways; designed to afford useful knowledge, in the popular style, to the holders of this class of property; as well as Railway Managers, Officers, and Agents. By JOHN B. JERVIS, late Civil Engineer of the Hudson River Railroad, Croton Aqueduct, etc. 12mo., cloth \$2.00

KEENE.—A Hand-Book of Practical Gauging:

For the Use of Beginners, to which is added a Chapter on Distillation, describing the process in operation at the Custom-House for ascertaining the Strength of Wines. By JAMES B. KEENE, of H. M. Customs. 8vo. \$1.25

KELLEY.—Speeches, Addresses, and Letters on Industrial and Financial Questions:

By HON. WILLIAM D. KELLEY, M. C. 544 pages, 8vo. \$3.00

KELLOGG.—A New Monetary System:

The only means of Securing the respective Rights of Labor and Property, and of Protecting the Public from Financial Revulsions. By EDWARD KELLOGG. Revised from his work on "Labor and other Capital." With numerous additions from his manuscript.

Edited by MARY KELLOGG PUTNAM. Fifth edition. To which is added a Biographical Sketch of the Author. One volume, 12mo.
 Paper cover \$1.00
 Bound in cloth 1.50

KEMLO.—Watch-Repairer's Hand-Book:

Being a Complete Guide to the Young Beginner, in Taking Apart, Putting Together, and Thoroughly Cleaning the English Lever and other Foreign Watches, and all American Watches. By F. KEMLO, Practical Watchmaker. With Illustrations. 12mo. . . \$1.25

KENTISH.—A Treatise on a Box of Instruments,

And the Slide Rule; with the Theory of Trigonometry and Logarithms, including Practical Geometry, Surveying, Measuring of Timber, Cask and Malt Gauging, Heights, and Distances. By THOMAS KENTISH. In one volume. 12mo. \$1.25

KERL.—The Assayer's Manual:

An Abridged Treatise on the Docimastic Examination of Ores, and Furnace and other Artificial Products. By BRUNO KERL, Professor in the Royal School of Mines; Member of the Royal Technical Commission for the Industries, and of the Imperial Patent-Office, Berlin. Translated from the German by WILLIAM T. BRANNT, Graduate of the Royal Agricultural College of Eldena, Prussia. Edited by WILLIAM H. WAHL, Ph. D., Secretary of the Franklin Institute, Philadelphia. Illustrated by sixty-five engravings. 8vo. . . \$3.00

KINGZETT.—The History, Products, and Processes of the Alkali Trade:

Including the most Recent Improvements. By CHARLES THOMAS KINGZETT, Consulting Chemist. With 23 illustrations. 8vo. . . \$2.50

KINSLEY.—Self-Instructor on Lumber Surveying:

For the Use of Lumber Manufacturers, Surveyors, and Teachers. By CHARLES KINSLEY, Practical Surveyor and Teacher of Surveying. 12mo. \$2.00

KIRK.—The Founding of Metals:

A Practical Treatise on the Melting of Iron, with a Description of the Founding of Alloys; also, of all the Metals and Mineral Substances used in the Art of Founding. Collected from original sources. By EDWARD KIRK, Practical Foundryman and Chemist. Illustrated. Third edition. 8vo. \$2.50

KITTREDGE.—The Compendium of Architectural Sheet-Metal Work:

Profusely Illustrated. Embracing Rules and Directions for Estimates, Items of Cost, Nomenclature, Tables of Brackets, Modillions, Dentals, Trusses, Stop-Blocks, Frieze Pieces, etc. Architect's Specifications, Tables of Tin-Roofing, Galvanized Iron, etc., etc. To which is added the Exemplar of Architectural Sheet-Metal Work, containing details of the Centennial Buildings, and other important Sheet-Metal Work, Designs and Prices of Architectural Ornaments, as manufactured for the Trade by the Kittredge Cornice and Ornament Com-

pany, and a Catalogue of Cornices, Window-Caps, Mouldings, etc., as manufactured by the Kittredge Cornice and Ornament Company. The whole supplemented by a full Index and Table of Contents. By A. O. KITTREDGE. 8vo., 565 pages . . . \$5.00

LANDRIN.—A Treatise on Steel:

Comprising its Theory, Metallurgy, Properties, Practical Working, and Use. By M. H. C. LANDRIN, JR., Civil Engineer. Translated from the French, with Notes, by A. A. FESQUET, Chemist and Engineer. With an Appendix on the Bessemer and the Martin Processes for Manufacturing Steel, from the Report of Abram S. Hewitt, United States Commissioner to the Universal Exposition, Paris, 1867. 12mo. . . . \$3.00

LARDEN.—A School Course on Heat:

By W. LARDEN, M. A. 321 pp. 12mo. . . . \$2.00

LARDNER.—The Steam-Engine:

For the Use of Beginners. By DR. LARDNER. Illustrated. 12mo.

LARKIN.—The Practical Brass and Iron Founder's Guide: 75

A Concise Treatise on Brass Founding, Moulding, the Metals and their Alloys, etc.; to which are added Recent Improvements in the Manufacture of Iron, Steel by the Bessemer Process, etc., etc. By JAMES LARKIN, late Conductor of the Brass Foundry Department in Reany, Neafe & Co.'s Penn Works, Philadelphia. Fifth edition, revised, with extensive additions. 12mo. . . . \$2.25

LEROUX.—A Practical Treatise on the Manufacture of Worsteds and Carded Yarns:

Comprising Practical Mechanics, with Rules and Calculations applied to Spinning; Sorting, Cleaning, and Scouring Wools; the English and French Methods of Combing, Drawing, and Spinning Worsteds, and Manufacturing Carded Yarns. Translated from the French of CHARLES LEROUX, Mechanical Engineer and Superintendent of a Spinning-Mill, by HORATIO PAINE, M. D., and A. A. FESQUET, Chemist and Engineer. Illustrated by twelve large Plates. To which is added an Appendix, containing Extracts from the Reports of the International Jury, and of the Artisans selected by the Committee appointed by the Council of the Society of Arts, London, on Woolen and Worsted Machinery and Fabrics, as exhibited in the Paris Universal Exposition, 1867. 8vo. . . . \$5.00

LEFFEL.—The Construction of Mill-Dams:

Comprising also the Building of Race and Reservoir Embankments and Head-Gates, the Measurement of Streams, Gauging of Water Supply, etc. By JAMES LEFFEL & Co. Illustrated by 58 engravings. 8vo. . . . \$2.50

LESLIE.—Complete Cookery:

Directions for Cookery in its Various Branches. By MISS LESLIE. Sixtieth thousand. Thoroughly revised, with the addition of New Receipts. In 12mo., cloth . . . \$1.50

LIEBER.—Assayer's Guide :

Or, Practical Directions to Assayers, Miners, and Smelters, for the Tests and Assays, by Heat and by Wet Processes, for the Ores of all the principal Metals, of Gold and Silver Coins and Alloys, and of Coal, etc. By OSCAR M. LIEBER. 12mo. . . . \$1.25

LOVE.—The Art of Dyeing, Cleaning, Scouring, and Finishing, on the Most Approved English and French Methods :

Being Practical Instructions in Dyeing Silks, Woolens, and Cottons, Feathers, Chips, Straw, etc. Scouring and Cleaning Bed and Window Curtains, Carpets, Rugs, etc. French and English Cleaning, any Color or Fabric of Silk, Satin, or Damask. By THOMAS LOVE, a Working Dyer and Scourer. Second American Edition, to which are added General Instructions for the use of Aniline Colors. 8vo. 343 pages \$5.00

LUKIN.—Amongst Machines :

Embracing Descriptions of the various Mechanical Appliances used in the Manufacture of Wood, Metal, and other Substances. 12mo. . . . \$1.75

LUKIN.—The Boy Engineers :

What They Did, and How They Did It. With 30 plates. 18mo. . . . \$1.75

LUKIN.—The Young Mechanic :

Practical Carpentry. Containing Directions for the Use of all kinds of Tools, and for Construction of Steam-Engines and Mechanical Models, including the Art of Turning in Wood and Metal. By JOHN LUKIN, Author of "The Lathe and Its Uses," etc. Illustrated. 12mo. \$1.75

MAIN and BROWN.—Questions on Subjects Connected with the Marine Steam-Engine :

And Examination Papers; with Hints for their Solution. By THOMAS J. MAIN, Professor of Mathematics, Royal Naval College, and THOMAS BROWN, Chief Engineer, R. N. 12mo., cloth . . . \$1.50

MAIN and BROWN.—The Indicator and Dynamometer :

With their Practical Applications to the Steam-Engine. By THOMAS J. MAIN, M. A. F. R., Ass't S. Professor Royal Naval College, Portsmouth, and THOMAS BROWN, Assoc. Inst. C. E., Chief Engineer R. N., attached to the R. N. College. Illustrated. 8vo. . . . \$1.50

MAIN and BROWN.—The Marine Steam-Engine.

By THOMAS J. MAIN, F. R. Ass't S. Mathematical Professor at the Royal Naval College, Portsmouth, and THOMAS BROWN, Assoc. Inst. C. E., Chief Engineer R. N. Attached to the Royal Naval College. With numerous illustrations. 8vo. \$5.00

MARTIN.—Screw-Cutting Tables, for the Use of Mechanical Engineers :

Showing the Proper Arrangement of Wheels for Cutting the Threads of Screws of any Required Pitch; with a Table for Making the Universal Gas-Pipe Thread and Taps. By W. A. MARTIN, Engineer. 8vo. 50

MICHELL.—Mine Drainage:

Being a Complete and Practical Treatise on Direct-Acting Underground Steam Pumping Machinery. With a Description of a large number of the best known Engines, their General Utility and the Special Sphere of their Action, the Mode of their Application, and their Merits compared with other Pumping Machinery. By STEPHEN MICHELL. Illustrated by 137 engravings. 8vo., 277 pages. \$6.00

MOLESWORTH.—Pocket-Book of Useful Formulæ and Memoranda for Civil and Mechanical Engineers.

By GUILFORD L. MOLESWORTH, Member of the Institution of Civil Engineers, Chief Resident Engineer of the Ceylon Railway. Full-bound in Pocket-book form. \$1.00

MOORE.—The Universal Assistant and the Complete Mechanic:

Containing over one million Industrial Facts, Calculations, Receipts, Processes, Trades Secrets, Rules, Business Forms, Legal Items, Etc., in every occupation, from the Household to the Manufactory. By R. MOORE. Illustrated by 500 Engravings. 12mo. \$2.50

MORRIS.—Easy Rules for the Measurement of Earthworks:

By means of the Prismoidal Formula. Illustrated with Numerous Wood-Cuts, Problems, and Examples, and concluded by an Extensive Table for finding the Solidity in cubic yards from Mean Areas. The whole being adapted for convenient use by Engineers, Surveyors, Contractors, and others needing Correct Measurements of Earthwork. By ELWOOD MORRIS, C. E. 8vo. \$1.50

MORTON.—The System of Calculating Diameter, Circumference, Area, and Squaring the Circle:

Together with Interest and Miscellaneous Tables, and other information. By JAMES MORTON. Second Edition, enlarged, with the Metric System. 12mo. \$1.00

NAPIER.—Manual of Electro-Metallurgy:

Including the Application of the Art to Manufacturing Processes. By JAMES NAPIER. Fourth American, from the Fourth London edition, revised and enlarged. Illustrated by engravings. 8vo. \$1.50

NAPIER.—A System of Chemistry Applied to Dyeing.

By JAMES NAPIER, F. C. S. A New and Thoroughly Revised Edition. Completely brought up to the present state of the Science, including the Chemistry of Coal Tar Colors, by A. A. FESQUET, Chemist and Engineer. With an Appendix on Dyeing and Calico Printing, as shown at the Universal Exposition, Paris, 1867. Illustrated. 8vo. 422 pages. \$5.00

NEVILLE.—Hydraulic Tables, Coefficients, and Formulæ, for finding the Discharge of Water from Orifices, Notches, Weirs, Pipes, and Rivers:

Third Edition, with Additions, consisting of New Formulæ for the Discharge from Tidal and Flood Sluices and Siphons; general information on Rainfall, Catchment-Basins, Drainage, Sewerage, Water Supply for Towns and Mill Power. By JOHN NEVILLE, C. E. M. R.

- I. A.; Fellow of the Royal Geological Society of Ireland. Thick 12mo. \$3.50
- NEWBERRY.**—*Gleanings from Ornamental Art of every style:*
 Drawn from Examples in the British, South Kensington, Indian, Crystal Palace, and other Museums, the Exhibitions of 1851 and 1862, and the best English and Foreign works. In a series of 100 exquisitely drawn Plates, containing many hundred examples. By ROBERT NEWBERRY. 4to. \$12.50
- NICHOLLS.**—*The Theoretical and Practical Boiler-Maker and Engineer's Reference Book:*
 Containing a variety of Useful Information for Employers of Labor, Foremen and Working Boiler-Makers, Iron, Copper, and Tinsmiths, Draughtsmen, Engineers, the General Steam-using Public, and for the Use of Science Schools and Classes. By SAMUEL NICHOLLS. Illustrated by sixteen plates, 12mo. \$2.50
- NICHOLSON.**—*A Manual of the Art of Bookbinding:*
 Containing full instructions in the different Branches of Forwarding, Gilding, and Finishing. Also, the Art of Marbling Book-edges and Paper. By JAMES B. NICHOLSON. Illustrated. 12mo., cloth \$2.25
- NICOLLS.**—*The Railway Builder:*
 A Hand-Book for Estimating the Probable Cost of American Railway Construction and Equipment. By WILLIAM J. NICOLLS, Civil Engineer. Illustrated, full bound, pocket-book form \$2.00
- NORMANDY.**—*The Commercial Handbook of Chemical Analysis:*
 Or Practical Instructions for the Determination of the Intrinsic or Commercial Value of Substances used in Manufactures, in Trades, and in the Arts. By A. NORMANDY. New Edition, Enlarged, and to a great extent rewritten. By HENRY M. NOAD, Ph.D., F.R.S., thick 12mo. \$5.00
- NORRIS.**—*A Handbook for Locomotive Engineers and Machinists:*
 Comprising the Proportions and Calculations for Constructing Locomotives; Manner of Setting Valves; Tables of Squares, Cubes, Areas, etc., etc. By SEPTIMUS NORRIS, M. E. New edition. Illustrated, 12mo. \$1.50
- NORTH.**—*The Practical Assayer:*
 Containing Easy Methods for the Assay of the Principal Metals and Alloys. Principally designed for explorers and those interested in Mines. By OLIVER NORTH. Illustrated. 12mo. \$2.50
- NYSTROM.**—*A New Treatise on Elements of Mechanics:*
 Establishing Strict Precision in the Meaning of Dynamical Terms; accompanied with an Appendix on Duodenal Arithmetic and Metrology. By JOHN W. NYSTROM, C. E. Illustrated. 8vo. \$2.00
- NYSTROM.**—*On Technological Education and the Construction of Ships and Screw Propellers:*
 For Naval and Marine Engineers. By JOHN W. NYSTROM, late

Acting Chief Engineer, U. S. N. Second edition, revised, with additional matter. Illustrated by seven engravings. 12mo. . . \$1.50

O'NEILL.—A Dictionary of Dyeing and Calico Printing:

Containing a brief account of all the Substances and Processes in use in the Art of Dyeing and Printing Textile Fabrics; with Practical Receipts and Scientific Information. By CHARLES O'NEILL, Analytical Chemist. To which is added an Essay on Coal Tar Colors and their application to Dyeing and Calico Printing. By A. A. FESQUET, Chemist and Engineer. With an appendix on Dyeing and Calico Printing, as shown at the Universal Exposition, Paris, 1867. 8vo., 491 pages . . . \$5.00

ORTON.—Underground Treasures:

How and Where to Find Them. A Key for the Ready Determination of all the Useful Minerals within the United States. By JAMES ORTON, A.M., Late Professor of Natural History in Vassar College, N. Y.; Cor. Mem. of the Academy of Natural Sciences, Philadelphia, and of the Lyceum of Natural History, New York; author of the "Andes and the Amazon," etc. A New Edition, with Additions. Illustrated . . . \$1.50

OSBORN.—The Metallurgy of Iron and Steel:

Theoretical and Practical in all its Branches; with special reference to American Materials and Processes. By H. S. OSBORN, LL. D., Professor of Mining and Metallurgy in Lafayette College, Easton, Pennsylvania. Illustrated by numerous large folding plates and wood-engravings. 8vo. . . \$25.00

OVERMAN.—The Manufacture of Steel:

Containing the Practice and Principles of Working and Making Steel. A Handbook for Blacksmiths and Workers in Steel and Iron, Wagon Makers, Die Sinkers, Cutlers, and Manufacturers of Files and Hardware, of Steel and Iron, and for Men of Science and Art. By FREDERICK OVERMAN, Mining Engineer, Author of the "Manufacture of Iron," etc. A new, enlarged, and revised Edition. By A. A. FESQUET, Chemist and Engineer. 12mo. . . \$1.50

OVERMAN.—The Moulder's and Founder's Pocket Guide:

A Treatise on Moulding and Founding in Green-sand, Dry-sand, Loam, and Cement; the Moulding of Machine Frames, Mill-gear, Hollowware, Ornaments, Trinkets, Bells, and Statues; Description of Moulds for Iron, Bronze, Brass, and other Metals; Plaster of Paris, Sulphur, Wax, etc.; the Construction of Melting Furnaces, the Melting and Founding of Metals; the Composition of Alloys and their Nature, etc., etc. By FREDERICK OVERMAN, M. E. A new Edition, to which is added a Supplement on Statuary and Ornamental Moulding, Ordinance, Malleable Iron Castings, etc. By A. A. FESQUET, Chemist and Engineer. Illustrated by 44 engravings. 12mo. . . \$2.00

PAINTER, GILDER, AND VARNISHER'S COMPANION:

Containing Rules and Regulations in everything relating to the Arts of Painting, Gilding, Varnishing, Glass-Staining, Graining, Marbling, Sign-Writing, Gilding on Glass, and Coach Painting and Varnishing;

- Tests for the Detection of Adulterations in Oils, Colors, etc.; and a Statement of the Diseases to which Painters are peculiarly liable, with the Simplest and Best Remedies. Sixteenth Edition. Revised, with an Appendix. Containing Colors and Coloring—Theoretical and Practical. Comprising descriptions of a great variety of Additional Pigments, their Qualities and Uses, to which are added, Dryers, and Modes and Operations of Painting, etc. Together with Chevreul's Principles of Harmony and Contrast of Colors. 12mo. Cloth \$1.50
- PALLET.**—The Miller's, Millwright's, and Engineer's Guide. By HENRY PALLET. Illustrated. 12mo. . . . \$3.00
- PEARSE.**—A Concise History of the Iron Manufacture of the American Colonies up to the Revolution, and of Pennsylvania until the present time. By JOHN B. PEARSE. Illustrated 12mo. . . . \$2.00
- PERCY.**—The Manufacture of Russian Sheet-Iron. By JOHN PERCY, M. D., F. R. S., Lecturer on Metallurgy at the Royal School of Mines, and to The Advance Class of Artillery Officers at the Royal Artillery Institution, Woolwich; Author of "Metallurgy." With Illustrations. 8vo., paper . . . 50 cts.
- PERKINS.**—Gas and Ventilation: Practical Treatise on Gas and Ventilation. With Special Relation to Illuminating, Heating, and Cooking by Gas. Including Scientific Helps to Engineer-students and others. With Illustrated Diagrams. By E. E. PERKINS. 12mo., cloth . . . \$1.25
- PERKINS AND STOWE.**—A New Guide to the Sheet-iron and Boiler Plate Roller: Containing a Series of Tables showing the Weight of Slabs and Piles to Produce Boiler Plates, and of the Weight of Piles and the Sizes of Bars to produce Sheet-iron; the Thickness of the Bar Gauge in decimals; the Weight per foot, and the Thickness on the Bar or Wire Gauge of the fractional parts of an inch; the Weight per sheet, and the Thickness on the Wire Gauge of Sheet-iron of various dimensions to weigh 112 lbs. per bundle; and the conversion of Short Weight into Long Weight, and Long Weight into Short. Estimated and collected by G. H. PERKINS and J. G. STOWE. \$2.50
- POWELL-CHANCE-HARRIS.**—The Principles of Glass Making. By HARRY J. POWELL, B. A. Together with Treatises on Crown and Sheet Glass; by HENRY CHANCE, M. A. And Plate Glass, by H. G. HARRIS, Asso. M. Inst. C. E. Illustrated 18mo. . . \$1.50
- PROTEAUX.**—Practical Guide for the Manufacture of Paper and Boards. By A. PROTEAUX. From the French, by HORATIO PAINE, A. B., M. D. To which is added the Manufacture of Paper from Wood, by HENRY T. BROWN. Illustrated by six plates. 8vo. . \$12.50
- PROCTOR.**—A Pocket-Book of Useful Tables and Formulæ for Marine Engineers. By FRANK PROCTOR. Second Edition, Revised and Enlarged. Full bound pocket-book form . . . \$1.50

REGNAULT.—Elements of Chemistry.

By M. V. REGNAULT. Translated from the French by T. FORREST BETTON, M. D., and edited, with Notes, by JAMES C. BOOTH, Melter and Refiner U. S. Mint, and WILLIAM L. FABER, Metallurgist and Mining Engineer. Illustrated by nearly 700 wood engravings. Comprising nearly 1,500 pages. In two volumes, 8vo., cloth . . . \$7.50

ROPER.—A Catechism of High-Pressure, or Non-Condensing Steam-Engines :

Including the Modelling, Constructing, and Management of Steam-Engines and Steam Boilers. With valuable illustrations. By STEPHEN ROPER, Engineer. Sixteenth edition, revised and enlarged. 18mo., tucks, gilt edge . . . \$2.00

ROPER.—Engineer's Handy-Book :

Containing a full Explanation of the Steam-Engine Indicator, and its Use and Advantages to Engineers and Steam Users. With Formulæ for Estimating the Power of all Classes of Steam-Engines; also, Facts, Figures, Questions, and Tables for Engineers who wish to qualify themselves for the United States Navy, the Revenue Service, the Mercantile Marine, or to take charge of the Better Class of Stationary Steam-Engines. Sixth edition. 16mo., 690 pages, tucks, gilt edge . . . \$3.50

ROPER.—Hand-Book of Land and Marine Engines :

Including the Modelling, Construction, Running, and Management of Land and Marine Engines and Boilers. With illustrations. By STEPHEN ROPER, Engineer. Sixth edition. 12mo., tucks, gilt edge. \$3.50

ROPER.—Hand-Book of the Locomotive :

Including the Construction of Engines and Boilers, and the Construction, Management, and Running of Locomotives. By STEPHEN ROPER. Eleventh edition. 18mo., tucks, gilt edge . . . \$2.50

ROPER.—Hand-Book of Modern Steam Fire-Engines.

With illustrations. By STEPHEN ROPER, Engineer. Fourth edition, 12mo., tucks, gilt edge . . . \$3.50

ROPER.—Questions and Answers for Engineers.

This little book contains all the Questions that Engineers will be asked when undergoing an Examination for the purpose of procuring Licenses, and they are so plain that any Engineer or Fireman of ordinary intelligence may commit them to memory in a short time. By STEPHEN ROPER, Engineer. Third edition . . . \$3.00

ROPER.—Use and Abuse of the Steam Boiler.

By STEPHEN ROPER, Engineer. Eighth edition, with illustrations. 18mo., tucks, gilt edge . . . \$2.00

ROSE.—The Complete Practical Machinist :

Embracing Lathe-Work, Vise-Work, Drills and Drilling, Taps and Dies, Hardening and Tempering, the Making and Use of Tools, Tool Grinding, Marking Out Work, etc. By JOSHUA ROSE, Author of "The Pattern-maker's Assistant" and "The Slide Valve." Illustrated by 196 engravings. Eighth edition, revised and enlarged by the addition of much new matter. 12mo., 441 pages . . . \$2.50

ROSE.—Mechanical Drawing Self-Taught:

Comprising Instructions in the Selection and Preparation of Drawing Instruments, Elementary Instruction in Practical Mechanical Drawing, together with Examples in Simple Geometry and Elementary Mechanism, including Screw Threads, Gear Wheels, Mechanical Motions, Engines and Boilers. By JOSHUA ROSE, M. E., Author of "The Complete Practical Machinist," "The Pattern-maker's Assistant," "The Slide-valve." Illustrated by 330 engravings. 8vo., 313 pages \$4.00

ROSE.—The Slide-Valve Practically Explained:

Embracing simple and complete Practical Demonstrations of the operation of each element in a Slide-valve Movement, and illustrating the effects of Variations in their Proportions by examples carefully selected from the most recent and successful practice. By JOSHUA ROSE, M. E., Author of "The Complete Practical Machinist," "The Pattern-maker's Assistant," etc. Illustrated by 35 engravings \$1.00

ROSELEUR.—Galvanoplastic Manipulations:

A Practical Guide for the Gold and Silver Electroplater, and the Galvanoplastic Operator. By ALFRED ROSELEUR, Chemist, Professor of the Galvanoplastic Art, Gold and Silver Electroplater. Edited from the fourth French edition, with the addition of much new and original American matter, bringing it up to the best practice of the present day. By WILLIAM H. WAHL, Ph. D., Secretary of the Franklin Institute. Illustrated by about 200 engravings. (*In press.*)

SHAW.—Civil Architecture:

Being a Complete Theoretical and Practical System of Building, containing the Fundamental Principles of the Art. By EDWARD SHAW, Architect. To which is added a Treatise on Gothic Architecture, etc. By THOMAS W. SILLOWAY and GEORGE M. HARDING, Architects. The whole illustrated by 102 quarto plates finely engraved on copper. Eleventh edition. 4to. \$10.00

SHUNK.—A Practical Treatise on Railway Curves and Location, for Young Engineers.

By WILLIAM F. SHUNK, Civil Engineer. 12mo. Full bound pocket-book form \$2.00

SLATER.—The Manual of Colors and Dye Wares.

By J. W. SLATER. 12mo. \$3.75

SLOAN.—American Houses:

A variety of Original Designs for Rural Buildings. Illustrated by twenty-six colored Engravings, with Descriptive References. By SAMUEL SLOAN, Architect, author of the "Model Architect," etc. etc. 8vo. \$1.50

SLOAN.—Homestead Architecture:

Containing Forty Designs for Villas, Cottages, and Farm-houses, with Essays on Style, Construction, Landscape Gardening, Furniture, etc., etc. Illustrated by upwards of 200 engravings. By SAMUEL SLOAN, Architect. 8vo. \$3.50

SMEATON.—Builder's Pocket-Companion:

Containing the Elements of Building, Surveying, and Architecture; with Practical Rules and Instructions connected with the subject. By A. C. SMEATON, Civil Engineer, etc. 12mo. . . . \$1.50

SMITH.—A Manual of Political Economy.

By E. PESHINE SMITH. A new Edition, to which is added a full Index. 12mo. . . . \$1.25

SMITH.—Parks and Pleasure-Grounds:

Or Practical Notes on Country Residences, Villas, Public Parks, and Gardens. By CHARLES H. J. SMITH, Landscape Gardener and Garden Architect, etc., etc. 12mo. . . . \$2.00

SMITH.—The Dyer's Instructor:

Comprising Practical Instructions in the Art of Dyeing Silk, Cotton, Wool, and Worsted, and Woolen Goods; containing nearly 800 Receipts. To which is added a Treatise on the Art of Padding; and the Printing of Silk Warps, Skeins, and Handkerchiefs, and the various Mordants and Colors for the different styles of such work. By DAVID SMITH, Pattern Dyer. 12mo. . . . \$3.00

SMYTH.—A Rudimentary Treatise on Coal and Coal-Mining.

By WARRINGTON W. SMYTH, M. A., F. R. G., President R. G. S. of Cornwall. Fifth edition, revised and corrected. With numerous illustrations. 12mo. . . . \$1.75

SNIVELY.—A Treatise on the Manufacture of Perfumes and Kindred Toilet Articles.

By JOHN H. SNIVELY, Phr. D., Professor of Analytical Chemistry in the Tennessee College of Pharmacy. 8vo. . . . \$3.00

SNIVELY.—Tables for Systematic Qualitative Chemical Analysis.

By JOHN H. SNIVELY, Phr. D. 8vo. . . . \$1.00

SNIVELY.—The Elements of Systematic Qualitative Chemical Analysis:

A Hand-book for Beginners. By JOHN H. SNIVELY, Phr. D. 16mo. . . . \$2.00

STEWART.—The American System:

Speeches on the Tariff Question, and on Internal Improvements, principally delivered in the House of Representatives of the United States. By ANDREW STEWART, late M. C. from Pennsylvania. With a Portrait, and a Biographical Sketch. 8vo. . . . \$3.00

STOKES.—The Cabinet-Maker and Upholsterer's Companion:

Comprising the Art of Drawing, as applicable to Cabinet Work; Veneering, Inlaying, and Buhl-Work; the Art of Dyeing and Staining Wood, Ivory, Bone, Tortoise-Shell, etc. Directions for Lackering, Japanning, and Varnishing; to make French Polish, Glues, Cements, and Compositions; with numerous Receipts, useful to workmen generally. By J. STOKES. Illustrated. A New Edition, with an Appendix upon French Polishing, Staining, Imitating, Varnishing, etc., etc. 12mo. . . . \$1.25

STRENGTH AND OTHER PROPERTIES OF METALS:

Reports of Experiments on the Strength and other Properties of Metals for Cannon. With a Description of the Machines for Testing Metals, and of the Classification of Cannon in service. By Officers of the Ordnance Department, U. S. Army. By authority of the Secretary of War. Illustrated by 25 large steel plates. Quarto. \$10.00

SULLIVAN.—Protection to Native Industry.

By Sir EDWARD SULLIVAN, Baronet, author of "Ten Chapters on Social Reforms." 8vo. \$1.50

SYME.—Outlines of an Industrial Science.

By DAVID SYME. 12mo. \$2.00

TABLES SHOWING THE WEIGHT OF ROUND, SQUARE, AND FLAT BAR IRON, STEEL, ETC.,

By Measurement. Cloth 63

TAYLOR.—Statistics of Coal:

Including Mineral Bituminous Substances employed in Arts and Manufactures; with their Geographical, Geological, and Commercial Distribution and Amount of Production and Consumption on the American Continent. With Incidental Statistics of the Iron Manufacture. By R. C. TAYLOR. Second edition, revised by S. S. HALDEMAN. Illustrated by five Maps and many wood engravings. 8vo., cloth \$10.00

TEMPLETON.—The Practical Examiner on Steam and the Steam-Engine:

With Instructive References relative thereto, arranged for the Use of Engineers, Students, and others. By WILLIAM TEMPLETON, Engineer. 12mo. \$1.25

THAUSING.—The Theory and Practice of the Preparation of Malt and the Fabrication of Beer:

With especial reference to the Vienna Process of Brewing. Elaborated from personal experience by JULIUS E. THAUSING, Professor at the School for Brewers, and at the Agricultural Institute, Mödling, near Vienna. Translated from the German by WILLIAM T. BRANNT, Graduate of the Royal Agricultural College of Eldena, Prussia. Thoroughly and elaborately edited, with much American matter, and according to the latest and most Scientific Practice, by A. SCHWARZ, Graduate of the Polytechnic School in Prague, Director of the First Scientific Station for Brewing in the United States, Publisher of "The American Brewer," and Dr. A. H. BAUER, M. A. C. S., Analytical Chemist, and Superintendent of the above Station, Editor of "The American Brewer." Illustrated by 140 engravings. 8vo. 815 pages \$10.00

THOMAS.—The Modern Practice of Photography.

By R. W. THOMAS, F. C. S. 8vo. 75

THOMPSON.—Political Economy. With Especial Reference to the Industrial History of Nations.

By ROBERT E. THOMPSON, M. A., Professor of Social Science in the University of Pennsylvania. 12mo. \$1.50

TURNER'S (THE) COMPANION:

Containing Instructions in Concentric, Elliptic, and Eccentric Turning; also various Plates of Chucks, Tools, and Instruments; and Directions for using the Eccentric Cutter, Drill, Vertical Cutter, and Circular Rest; with Patterns and Instructions for working them.
12mo. \$1.25

TURNING: Specimens of Fancy Turning Executed on the Hand or Foot-Lathe:

With Geometric, Oval, and Eccentric Chucks, and Elliptical Cutting Frame. By an Amateur. Illustrated by 30 exquisite Photographs.
4to. \$3.00

URBIN—BRULL.—A Practical Guide for Puddling Iron and Steel.

By ED. URBIN, Engineer of Arts and Manufactures. A Prize Essay, read before the Association of Engineers, Graduate of the School of Mines, of Liege, Belgium, at the Meeting of 1865-6. To which is added A COMPARISON OF THE RESISTING PROPERTIES OF IRON AND STEEL. By A. BRULL. Translated from the French by A. A. FESQUET, Chemist and Engineer. 8vo. \$1.00

VAILE.—Galvanized-Iron Cornice-Worker's Manual:

Containing Instructions in Laying out the Different Mitres, and Making Patterns for all kinds of Plain and Circular Work. Also, Tables of Weights, Areas and Circumferences of Circles, and other Matter calculated to Benefit the Trade. By CHARLES A. VAILE. Illustrated by twenty-one plates. 4to. \$5.00

VILLE.—On Artificial Manures:

Their Chemical Selection and Scientific Application to Agriculture. A series of Lectures given at the Experimental Farm at Vincennes, during 1867 and 1874-75. By M. GEORGES VILLE. Translated and Edited by WILLIAM CROOKES, F. R. S. Illustrated by thirty-one engravings. 8vo., 450 pages \$6.00

VILLE.—The School of Chemical Manures:

Or, Elementary Principles in the Use of Fertilizing Agents. From the French of M. GEO. VILLE, by A. A. FESQUET, Chemist and Engineer. With Illustrations. 12mo. \$1.25

VOGDES.—The Architect's and Builder's Pocket-Companion and Price-Book:

Consisting of a Short but Comprehensive Epitome of Decimals, Duodecimals, Geometry, and Mensuration; with Tables of U. S. Measures, Sizes, Weights, Strengths, etc., of Iron, Wood, Stone, and various other Materials, Quantities of Materials in Given Sizes, and Dimensions of Wood, Brick, and Stone; and a full and complete Bill of Prices for Carpenter's Work; also, Rules for Computing and Valuing Brick and Brick Work, Stone Work, Painting, Plastering, etc. By FRANK W. VOGDES, Architect. Illustrated. Full bound in pocket-book form \$2.00
Bound in cloth 1.50

WARE.—The Sugar Beet.

Including a History of the Beet Sugar Industry in Europe, Varieties of the Sugar Beet, Examination, Soils, Tillage, Seeds and Sowing, Yield and Cost of Cultivation, Harvesting, Transportation, Conservation, Feeding Qualities of the Beet and of the Pulp, etc. By LEWIS S. WARE, C. E., M. E. Illustrated by ninety engravings. 8vo.

\$4.00

WARN.—The Sheet-Metal Worker's Instructor:

For Zinc, Sheet-Iron, Copper, and Tin-Plate Workers, etc. Containing a selection of Geometrical Problems; also, Practical and Simple Rules for Describing the various Patterns required in the different branches of the above Trades. By REUBEN H. WARN, Practical Tin-Plate Worker. To which is added an Appendix, containing Instructions for Boiler-Making, Mensuration of Surfaces and Solids, Rules for Calculating the Weights of different Figures of Iron and Steel, Tables of the Weights of Iron, Steel, etc. Illustrated by thirty-two Plates and thirty-seven Wood Engravings. 8vo.

\$3.00

WARNER.—New Theorems, Tables, and Diagrams, for the Computation of Earth-work:

Designed for the use of Engineers in Preliminary and Final Estimates, of Students in Engineering, and of Contractors and other non-professional Computers. In two parts, with an Appendix. Part I. A Practical Treatise; Part II. A Theoretical Treatise, and the Appendix. Containing Notes to the Rules and Examples of Part I.; Explanations of the Construction of Scales, Tables, and Diagrams, and a Treatise upon Equivalent Square Bases and Equivalent Level Heights. The whole illustrated by numerous original engravings, comprising explanatory cuts for Definitions and Problems, Stereonometric Scales and Diagrams, and a series of Lithographic Drawings from Models: Showing all the Combinations of Solid Forms which occur in Railroad Excavations and Embankments. By JOHN WARNER, A. M., Mining and Mechanical Engineer. Illustrated by 14 Plates. A new, revised and improved edition. 8vo.

\$4.00

WATSON.—A Manual of the Hand-Lathe:

Comprising Concise Directions for Working Metals of all kinds, Ivory, Bone and Precious Woods; Dyeing, Coloring, and French Polishing; Inlaying by Veneers, and various methods practised to produce Elaborate work with Dispatch, and at Small Expense. By EGBERT P. WATSON, Author of "The Modern Practice of American Machinists and Engineers." Illustrated by 78 engravings.

\$1.50

WATSON.—The Modern Practice of American Machinists and Engineers:

Including the Construction, Application, and Use of Drills, Lathe Tools, Cutters for Boring Cylinders, and Hollow-work generally, with the most Economical Speed for the same; the Results verified by Actual Practice at the Lathe, the Vise, and on the Floor. Together

- with Workshop Management, Economy of Manufacture, the Steam-Engine, Boilers, Gears, Belting, etc., etc. By **EGBERT P. WATSON**. Illustrated by eighty-six engravings. 12mo. \$2.50
- WATSON.**—The Theory and Practice of the Art of Weaving by Hand and Power :
With Calculations and Tables for the Use of those connected with the Trade. By **JOHN WATSON**, Manufacturer and Practical Machine-Maker. Illustrated by large Drawings of the best Power Looms. 8vo. \$7.50
- WEATHERLY.**—Treatise on the Art of Boiling Sugar, Crystallizing, Lozenge-making, Comfits, Gum Goods,
And other processes for Confectionery, etc., in which are explained, in an easy and familiar manner, the various Methods of Manufacturing every Description of Raw and Refined Sugar Goods, as sold by Confectioners and others. 12mo. \$1.50
- WEDDING.**—Elements of the Metallurgy of Iron.
By **Dr. HERMANN WEDDING**, Royal Privy Counsellor of Mines, Berlin, Prussia. Translated from the second revised and rewritten German edition. By **WILLIAM T. BRANNT**, Graduate of the Royal Agricultural College at Eldena, Prussia. Edited by **WILLIAM H. WAHL**, Ph. D., Secretary of the Franklin Institute, Philadelphia. Illustrated by about 250 engravings. 8vo., about 500 pages (*In preparation*.)
- WEINHOLD.**—Introduction to Experimental Physics, Theoretical and Practical.
Including directions for Constructing Physical Apparatus and for Making Experiments. By **ADOLF F. WEINHOLD**, Professor in the Royal Technical School at Chemnitz. Translated and edited, with the author's sanction, by **BENJAMIN LOEWY**, F. R. A. S., with a preface, by **G. C. FOSTER**, F. R. S. Illustrated by three colored plates and 404 wood-cuts. 8vo., 848 pages \$6.00
- WILL.**—Tables of Qualitative Chemical Analysis.
With an Introductory Chapter on the Course of Analysis. By Professor **HEINRICH WILL**, of Giessen, Germany. Third American, from the eleventh German edition. Edited by **CHARLES F. HIMES**, Ph. D., Professor of Natural Science, Dickinson College, Carlisle, Pa. 8vo. \$1.50
- WILLIAMS.**—On Heat and Steam :
Embracing New Views of Vaporization, Condensation, and Explosion. By **CHARLES WYE WILLIAMS**, A. I. C. E. Illustrated 8vo. \$3.50
- WILSON.**—A Treatise on Steam Boilers :
Their Strength, Construction, and Economical Working. By **ROBERT WILSON**. Illustrated 12mo. \$2.50
- WILSON.**—Cotton Carder's Companion :
In which is given a description of the manner of Picking, Baling, Marketing, Opening, and Carding Cotton ; to which is added a list of valuable Tables, Rules, and Receipts, by **FOSTER WILSON**. 12mo. \$1.50